ELECTRICAL WEST

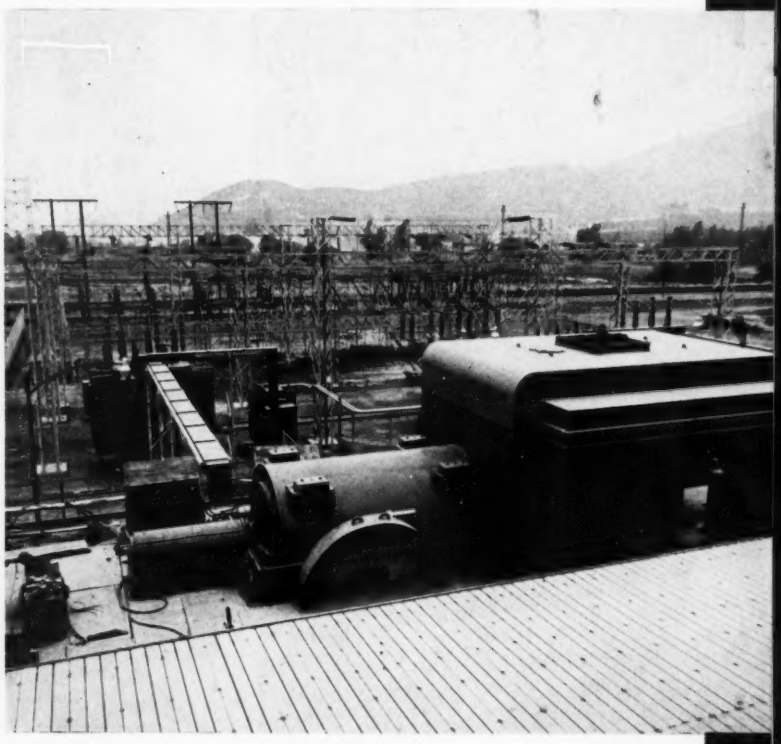
July 1952
25 Cents

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.

Salesmanship Has Two Jobs 94

Functional Is the Word for It 74

A Model Service Center 66



Highgrove Is Completely Outdoor Plant
by Willis T. Johnson 63

Set Our Sails for the Future
by J. M. McKibbin 61

Two-Point Microwave System Proposed
by W. A. Leidigh Jr. 70

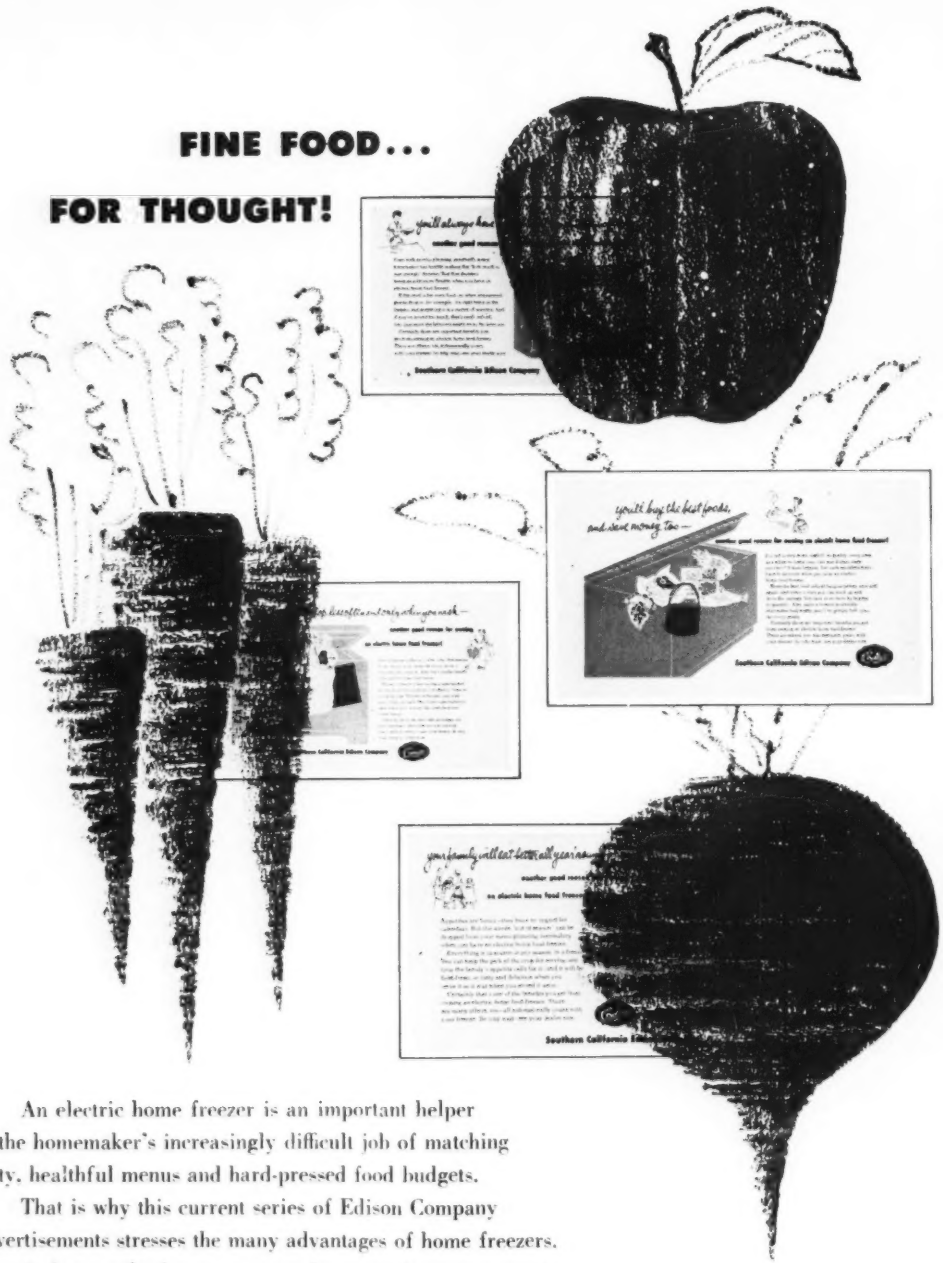
Designed for Full Banking Service 76

Lighting Begins at Home 87

Inspectors Berate the Derated Switch 108

FINE FOOD...

FOR THOUGHT!



An electric home freezer is an important helper in the homemaker's increasingly difficult job of matching tasty, healthful menus and hard-pressed food budgets.

That is why this current series of Edison Company advertisements stresses the many advantages of home freezers.

As long as the freezer story makes sense for customers, it makes dollars for dealers!

SOUTHERN CALIFORNIA EDISON COMPANY

1951 Winner, Coffin Award

CONGRATULATIONS on a well-merited award are voiced by Philip D. Reed, Chairman, General Electric Board of Directors, as the Charles A. Coffin medal for 1951 is presented to James P. Black, President, Pacific Gas and Electric Company at E.E.I. Convention in Cleveland this month.

PG&E achievement dramatizes vital role of electric utilities in national progress

BILLION-DOLLAR EXPANSION PROGRAM of PG & E has doubled generating capacity in past six years. Contra Costa station above is latest addition in a total of 58 hydro and 17 steam plants.

Citation of the Pacific Gas and Electric Company as 1951 winner of the coveted Charles A. Coffin medal has a special significance for the entire electric utility industry.

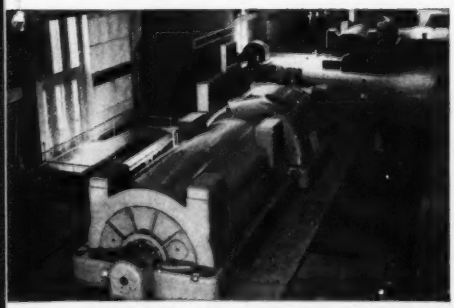
In paying tribute to the exceptional achievements of the PG&E, the award also serves to emphasize the tremendous contributions to community progress and prosperity made by the electric power companies across the nation.

With its spectacular, privately financed, billion-dollar construction program, designed to serve one of the most rapidly developing regions in the country, the Pacific Gas and Electric Company has given convincing proof of the ability and willingness of the electric utility industry to foresee and meet rocketing demands for electric power during the greatest period of national expansion in electrical history.

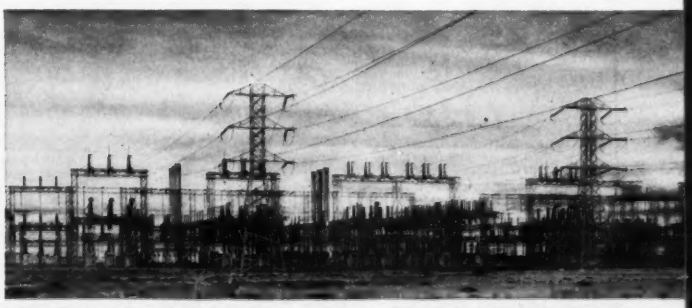
With millions of kilowatts of new generating capacity now being installed, and millions more planned for the years ahead, the electric utility industry will continue to serve, adequately and efficiently, the ever-growing power needs of America. General Electric Company, Schenectady 5, N. Y. 301-203

MORE POWER TO AMERICA

GENERAL ELECTRIC



18 LARGE TURBINES, with a capacity of 1,840,000 kw have been added since the war. Typical examples are G-E turbine generators above, at Contra Costa plant, rated 100,000 kw, 3600 rpm, 1300-lb pressure.



RECORD-BREAKING EXPANSION of transmission and distribution facilities during 1951 included 468 circuit miles of transmission line, 2220 miles of distribution lines and 29 large substations. 23,101 distribution transformers totalling 523,076 kva have been installed. Switchyard at Contra Costa, above, gives some idea of huge scope of construction program.

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

JULY
1952

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright. Sixty-fifth year of publication

VOL. 109
NO. 1

ELECTRICAL WEST

George C. Tenney, Editor
W. A. Cyr, Associate Editor — Walter C. Heston, Engineering Editor
Peggy Boyer, Assistant Editor — John Cootz, Typography

CONTENTS

Set Our Sails for the Future by J. M. McKibbin..... 61

ENGINEERING

Highgrove Is Completely Outdoor Plant by Willis T. Johnson..... 63
SMUD Builds Model Service Center by H. R. LaFortune.. 66
Two-Point Microwave System Proposed by W. A. Leidigh Jr. 70
Interrupter Switch for Single-Pole Mounting..... 73

LIGHTING AND WIRING

Functional Is the Word for It..... 74
Designed for Full Banking Service..... 76

SALES

Lighting Begins at Home..... 87
Kitchen Plan Service Keeps Them Sold..... 88
Business in Show Business..... 90

ASSOCIATIONS

PCEA Hears That Salesmanship Has Two Jobs..... 94
Labor-Management Meet in Dist. 8.....104

DEPARTMENTS

Bulletins	56	New Products	35
Contractors' News Letter	79	News	118
Editorials	92	Sales Guide News Letter	83
Electra's Husband	58	Advertising Index	136

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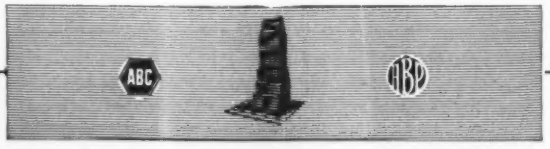

Next Month

Aluminum conductor is currently very much in the limelight in technical press discussion. Electrical West has had a number of pieces and several "firsts" and will continue to contribute to the literature on the subject of conductor and accessories.

Next month there will be an excellent article telling of the use of light steel ACSR cable with subtransmission preformed armor rod splices—a most interesting new development. Experience with connectors for both copper and aluminum will be discussed also.

Then there will be digests of two papers on aluminum conductor for distribution by manufacturers' representatives.

A recent development in power line carrier operation is a broad band coupling unit by which the number of channels can be increased up to 17. This important development will be described in another article.

Adequate wiring promotions being carried on in the West, including a program for rewiring old houses, will come in for review. Methods used in installing a luminous ceiling in the new SMUD service center in Sacramento will interest contractors and lighting men.

The two news letters, which are receiving greater readership each succeeding issue, and other regular features will round out the issue.

THE ELECTRICAL WEST EDITORIAL ADVISORY BOARD— UTILITIES: N. R. Sutherland, Vice-President and General Manager, Pacific Gas and Electric Company, San Francisco; J. A. Hale, Vice-President, Utah Power & Light Company, Salt Lake City; Glenn L. Jackson, Vice-President and Commercial Manager, the California Oregon Power Company, Medford; Kinsey M. Robinson, President, Washington Water Power Company, Spokane; J. H. Polhemus, President, Portland General Electric Company; W. C. Mullendore, President, Southern California Edison Co. Ltd., Los Angeles. MANUFACTURERS: J. H. Pengilly, Executive Vice-President, Square D Company, Los Angeles; R. A. Neal, Vice-President, Westinghouse Electric Corporation, San Francisco; Ray Turnbull, Vice-President, General Electric Company, San Francisco. WHOLESALERS: A. H. Meyer, Leo J. Meyberg Co., San Francisco and Los Angeles; Harry C. Gerster, Vice - President, General Electric Supply Corp., Los Angeles. CONTRACTORS: Teo L. Rosenberg, T. L. Rosenberg Co., Oakland; Don Larson, manager, Rocky Mt. Chapter, NECA, Denver. DEALERS: K. L. Hampton, manager, Valley Electrical Supply Company, Fresno; J. C. Chamberlain, Sec.-Mgr., Bureau of Home Appliances of San Diego County, San Diego, California.

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NEW! EXCLUSIVE!
L-M's 7.5 KV "FAMILY"
of cutouts with interchangeable doors!

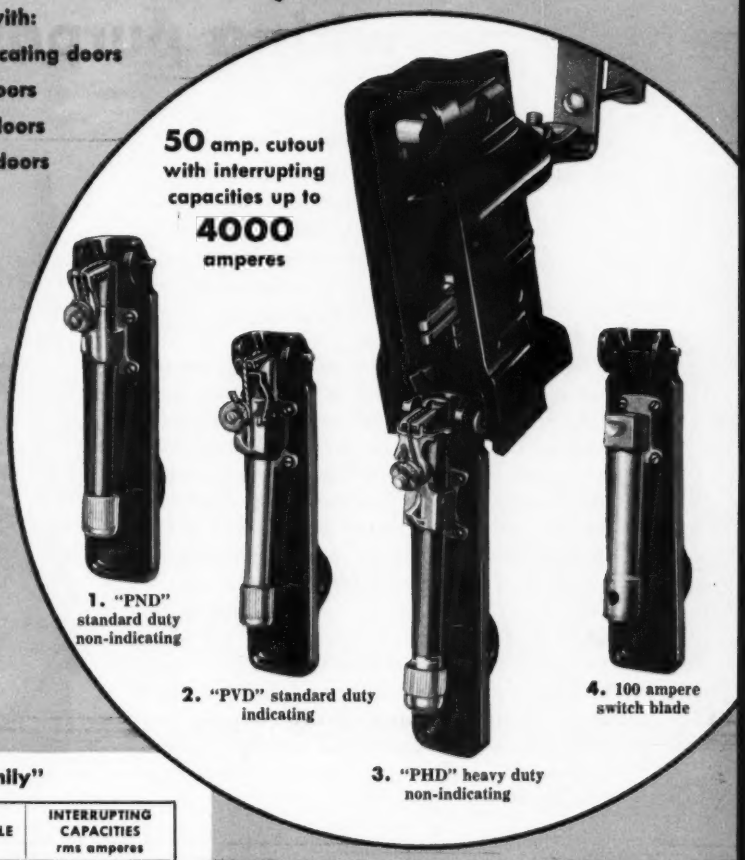
50 and 100 ampere cutouts, each with:
new "PND" standard duty non-indicating doors
"PVD"® standard duty indicating doors
"PHD" heavy duty non-indicating doors
100 and 200 ampere switch blade doors

Here's another L-M "first"! The new 7500-volt family of 50 and 100 ampere cutouts, each with four interchangeable doors to meet a wide variety of services. As operating requirements change, you simply change a door—in 6 seconds the job is done! Saves warehousing, saves installation time, saves in operation.

Safer, too. Doors are removed or hooked on, all with the switch stick. When door is open, all parts are dead.

GET THE WHOLE STORY

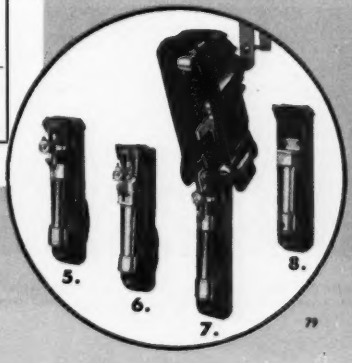
Ask the L-M Field Engineer for details on L-M's new "first families"—the 7500-volt family shown here, *and L-M's new 5000-volt family*, also! Or write Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division).


50 amp. cutout with interrupting capacities up to 4000 amperes
1. "PND" standard duty non-indicating
2. "PVD" standard duty indicating
3. "PHD" heavy duty non-indicating
4. 100 ampere switch blade

L-M's new 7.5 kv "Family"

RATING	INTERCHANGEABLE DOORS AVAILABLE	INTERRUPTING CAPACITIES rms amperes
50 AMPERES	1. "PND" standard duty non-indicating	1200 amperes
	2. "PVD" standard duty indicating	1200
	3. "PHD" heavy duty non-indicating	4000
	4. Switch Blade — 100 amperes continuous current rating	
100 AMPERES	5. "PND" standard duty non-indicating	3000 amperes
	6. "PVD" standard duty indicating	3000
	7. "PHD" heavy duty non-indicating	8000*
	8. Switch Blade — 200 amperes continuous current rating	

"PND", "PVD", AND "PHD" are L-M Trademarks *Available soon



100 amp. cutout with interrupting capacities up to 8000 amperes

5. "PND" standard duty non-indicating
6. "PVD" standard duty indicating
7. "PHD" heavy duty non-indicating
8. 200 ampere switch blade

LINE MATERIAL
fuse cutouts

Complete Coordinated Equipment for Distribution Today

Pretty...

with a purpose!

Here's a single-feeder substation that solves real estate, as well as other power distribution problems.

Good looks quickly overcome community objections to substation structures. Underground leads, with all live elements securely locked behind dead-front doors, provide *complete safety* . . . eliminate the need for fencing.

Co-operatively designed by Westinghouse and one of the nation's leading utilities, this is a complete substation. It includes high-voltage switching, transformer, low-voltage breaker, and complete protection. All parts are factory tested, co-ordinated and assembled. Quick and easy installation, too! Delivered to you as one item, instead of sixty or more, it minimizes the problems of field erection.

Further economies are effected by the compact design, requiring smaller plots of land with a single foundation mat.

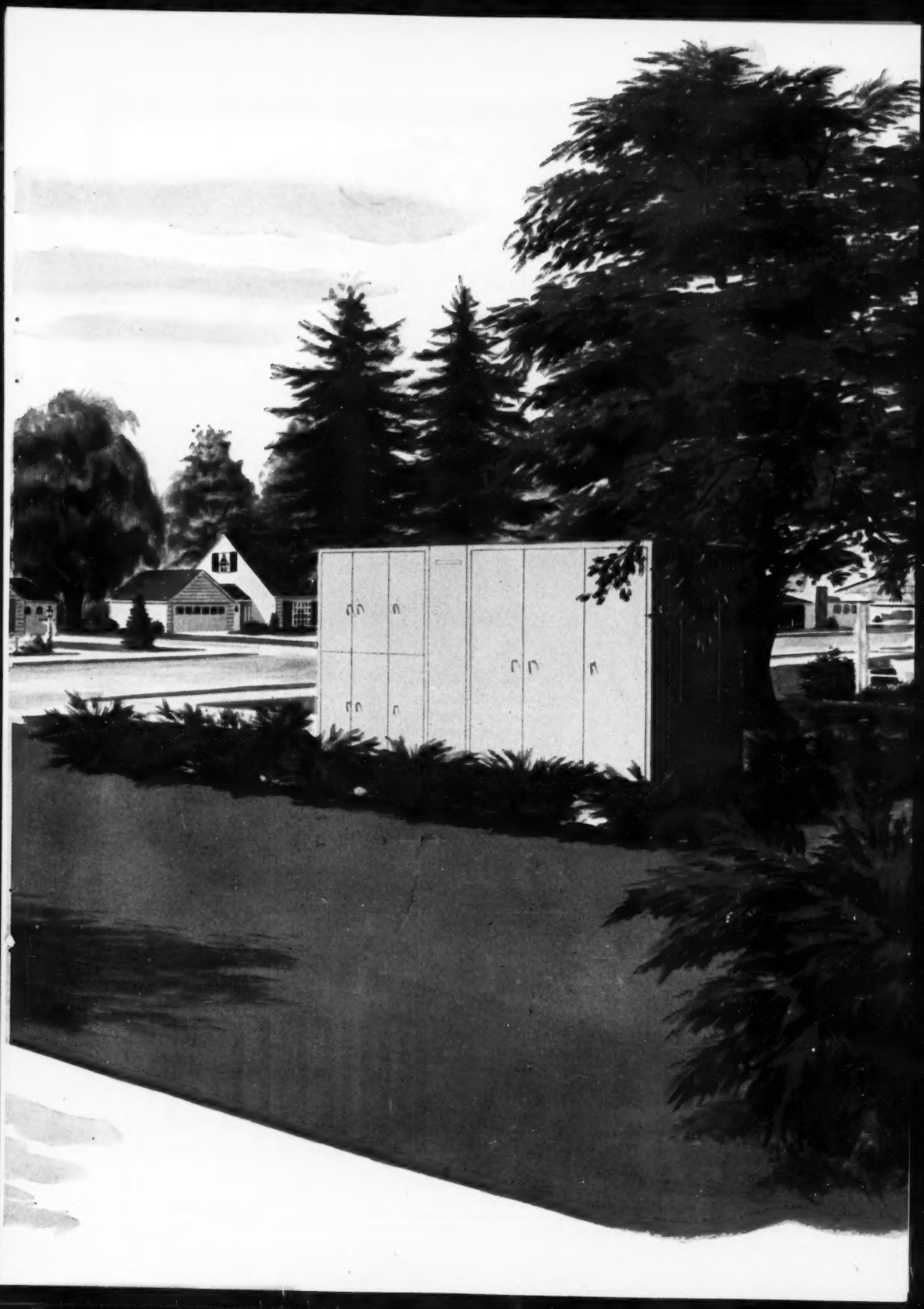
Contoured design units, as illustrated, are available in the 25-kv class and below, 1,000 to 3,000 kva. For complete information, contact your Westinghouse representative, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70633

YOU CAN BE SURE... IF IT'S

Westinghouse

"CSP"® POWER TRANSFORMERS

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver



B-M *Fittings*

ARE APPROVED AS CONCRETETIGHT

When setting E. M. T. in concrete you can make each job easier and more profitable by using Briegel All Steel Indenter Fittings that have UL approval as CONCRETE-TIGHT. Contractors the world over recognize their cost cutting qualities and the fact that they make each wiring job a better job. It is only natural that Briegel Fittings are the most widely used E. M. T. connectors and couplings.

Cross Section Showing Indentations.

BRIEGEL METHOD TOOL CO.

GALVA, • ILLINOIS

Distributed by

The M. B. Austin Co., Northbrook, Ill.; Clayton Mark & Co., Evanston, Ill.; Clifton Conduit Co., Jersey City, N. J.; General Electric Co., Bridgeport, Conn.; The Steelduct Co., Youngstown, Ohio; Pittsburg Standard Conduit Co., Pittsburgh, Penn.; Wagner Malleable Products Co., Decatur, Ill.; J. R. Richards Co., Carnegie, Penn.; Kondu Mfg. Co., Ltd., Preston, Ont.

for time-saving, money-saving

POWER DISTRIBUTION

SQUARE D FEED-IN DUCT

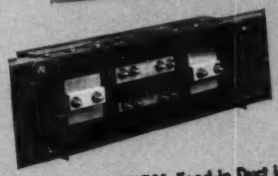
is the most efficient way to transmit large amounts of power. It provides the lowest known voltage drop—only 1.8 volts per 1000 amperes per 100 feet.

Exclusive design requires no ventilation—permits a totally enclosed, compact, dust-excluding enclosure. Rigid construction provides high resistance to heavy electrical stresses.

SQUARE D PLUG-IN DUCT

provides flexible power distribution for branch circuits. Machinery can be rearranged quickly at minimum cost. Plug-in units can be attached at frequent intervals along the length of the duct, providing power where it's needed, when it's needed.

BUSWAY FEATURES PROVE DESIGN LEADERSHIP



NEW JOINT DESIGN. Feed-in Duct joint design saves installation time and reduces maintenance cost. Duct ends are identical—unnecessary to select mating ends before positioning or hanging duct sections. Outward-facing, pre-installed bolts permit rapid assembly and easy maintenance.

ROUND BUS BARS for Plug-in Duct provide greater mechanical strength and resistance to short-circuit stresses. Circuit breaker or fusible type plug-in units are easily installed at 2-foot intervals along both sides of the duct. Plug-in stabs grip the round bus bars with exceptionally high pressure.

FLEXIBLE CONNECTORS of laminated copper join bus bars between sections—permit proper alignment, insure tight joints and provide for expansion and contraction at Plug-in duct joints. All bolt heads face outward for greater accessibility.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

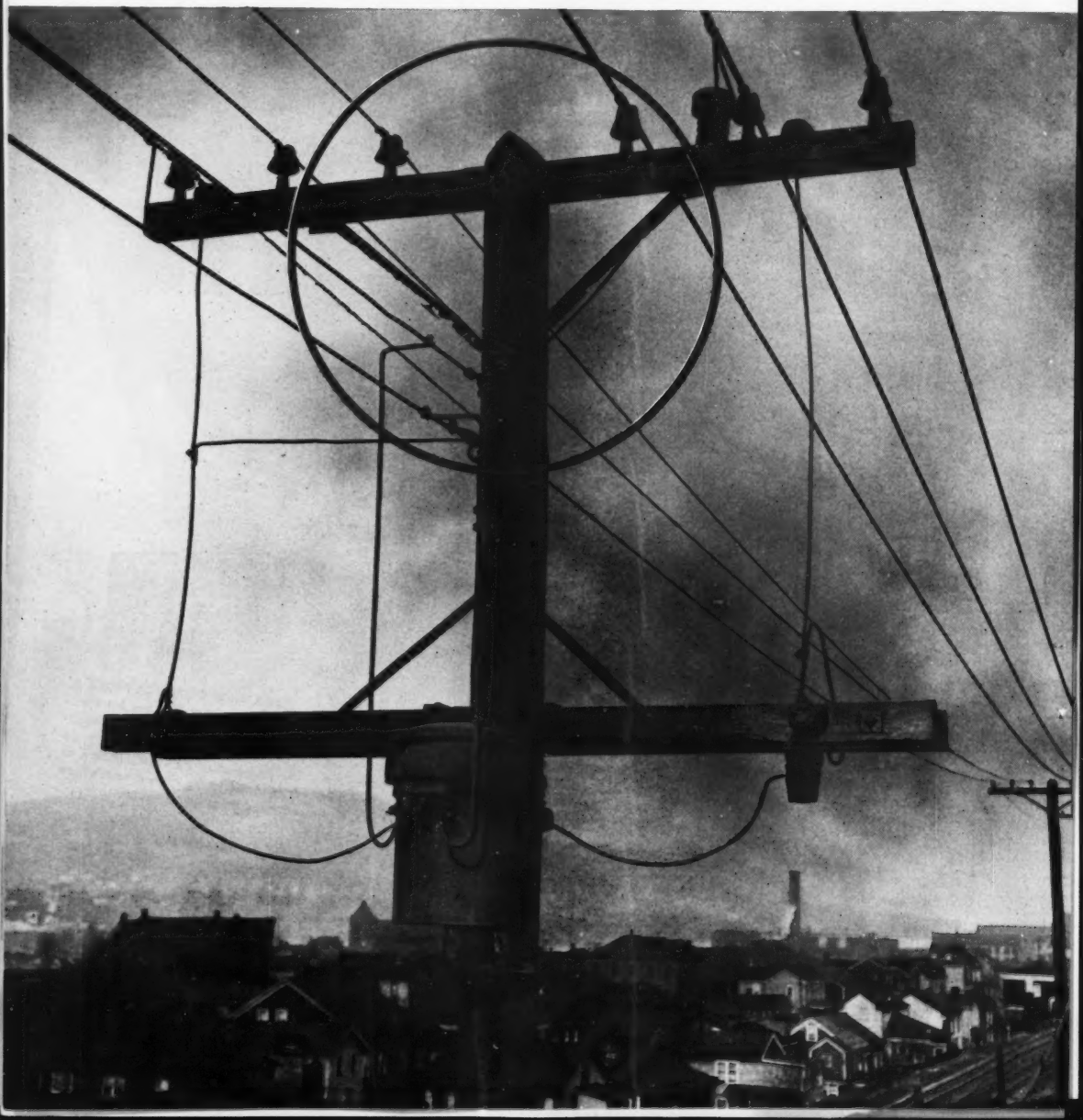
SQUARE D COMPANY

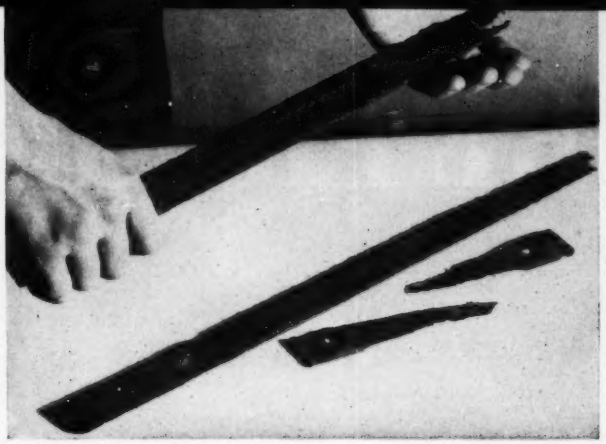
DETROIT · MILWAUKEE · LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

SPIRAKORE* transformers
give extra years of service

Crossarm braces eaten away but...





CORRODED CROSSARM BRACES illustrated above provide dramatic evidence of the corrosive effects of industrial smog.

TYPICAL SPIRAKORE INSTALLATION showing corrosive atmosphere successfully resisted by finish on Spirakore transformers.

finish on G-E Spirakore* transformers resists corrosive "industrial smog"

Smoke, soot, grit, and corrosive gases belching from industrial stacks in the Ohio River Valley, create an almost perpetual "industrial smog" that subjects electrical equipment finishes to continual attack.

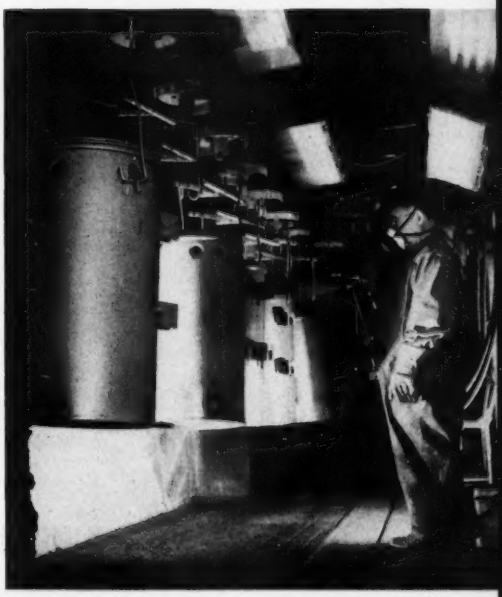
As a result the local electric utility reports frequent instances where the corrosive atmosphere has eaten completely thru crossarm braces and other pole-line hardware. Yet, even under these conditions, the company obtains excellent service from the finish on G-E Spirakore transformers.

Spirakore finishes stand up because of the *extra* precautions we take in manufacture. We shot blast, completely, each transformer tank. And we use zinc paint *under* all parts to be welded. Then, we apply two *baked-on* coats; a rust-inhibiting primer; and a finish coat of Melaglyp, a superior synthetic resin paint made with melamine-modified Glyptal* alkyd-resin.

Just one of many Spirakore advantages. With G-E Spirakore transformers, besides better paint, you get savings in size and weight due to recent improvements in core-steel quality and construction methods. You get improved impulse strength. You get sealed-tank construction for longer transformer oil life, and improved accessibility even with complete sealing.

For complete information on these and the many other reasons why G-E Spirakore transformers give extra years of service write for Bulletin GEA-4885 and GEA-5400. *General Electric Company, Schenectady 5, N. Y.*

*Registered Trademark of the General Electric Company



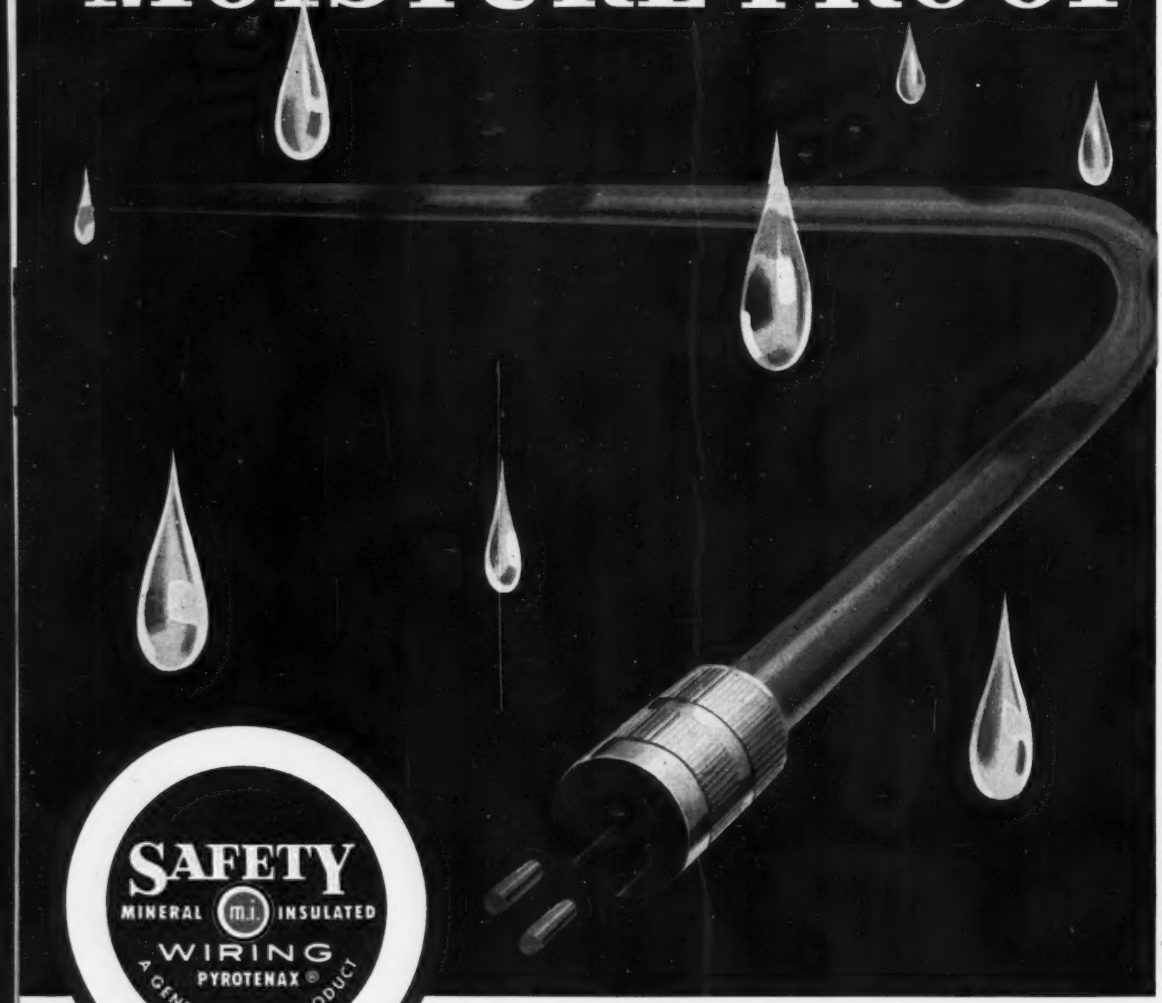
BETTER FINISH on Spirakore transformers results from melaglyp paint, a superior synthetic resin paint developed in General Electric laboratories.

402-120

GENERAL ELECTRIC

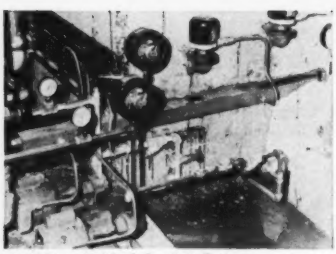
With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

MOISTURE PROOF



SAFETY
MINERAL m.i. INSULATED
WIRING
PYROTENAX®
A GENERAL CABLE PRODUCT

SAFETY m.i. WIRING* is available with fittings to connect to standard boxes and equipment.



Being completely moisture-proof, Safety m.i. Wiring is ideal for installations in moisture-filled meat packing houses (shown left), and refrigeration plants.

Exclusively a General Cable Product

SAFETY m.i. WIRING

is completely impervious to moisture, oils, most acids and alkalies . . . and is unaffected by extremes of heat or cold

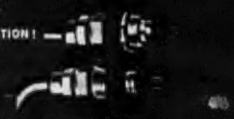
Sealed within a continuous copper sheath, the insulation of a Safety m.i. Wiring System affords complete immunity from deterioration in dielectric properties normally caused by the presence of gases, water, oil, solvents or accumulated condensation in confined spaces.

Self-protected, Safety m.i. Wiring offers important advantages beyond this sealed-in imperviousness—particularly in circuits where absolute protection from interruption is essential.

Briefly outlined here, these advantages will prove well worth your closer examination. Write today for our new brochure, "20 Questions & 20 Answers on Safety m.i. Wiring System".

OUTLASTS STRUCTURE IN WHICH INSTALLED!

ONE-STEP INSTALLATION!



NO VAPOR PASSAGE!

COMPLETELY MOISTURE-PROOF!

RIGID YET FLEXIBLE!

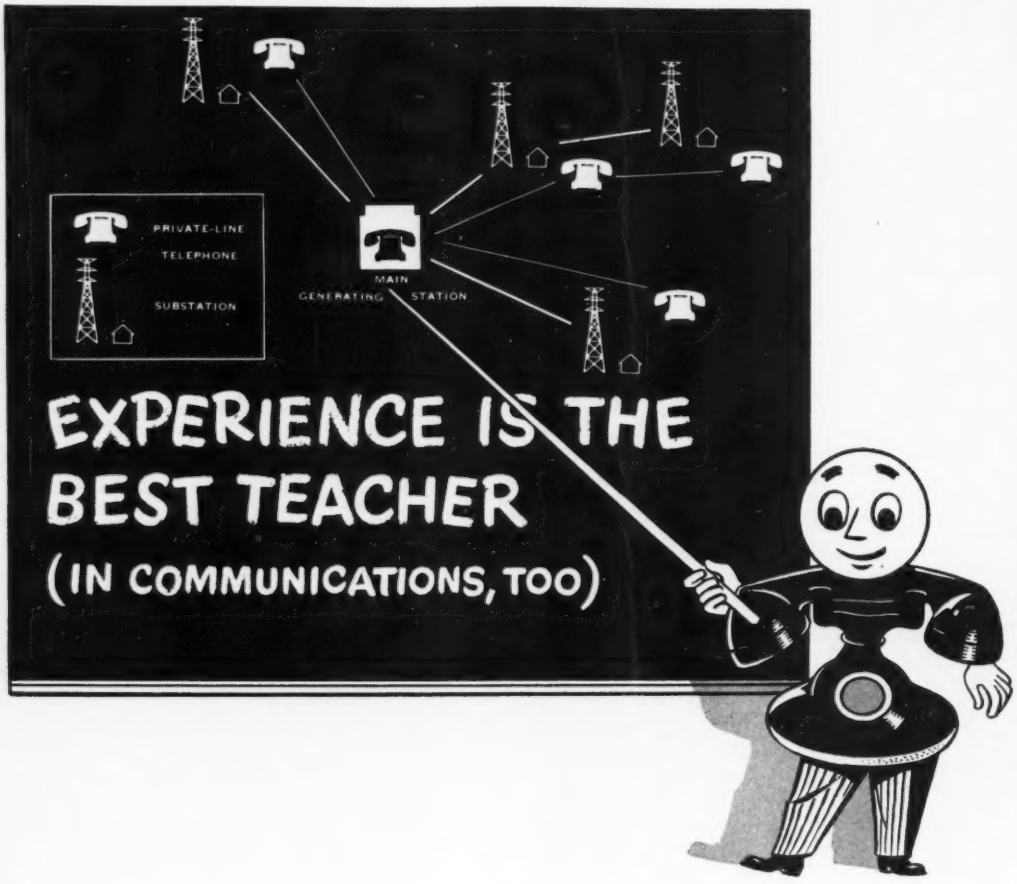
NO HEAT DETERIORATION!

GENERAL CABLE
CORPORATION

EXECUTIVE OFFICES: 420 LEXINGTON AVENUE, NEW YORK 17, SALES OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES

"More Power to You"

GENERAL CABLE GENERAL CABLE GENERAL CABLE



Every step in power-line operations is based on experience. Out of experience come newer, faster, better ways of doing things.

The communications services offered by the Bell Telephone System are based on more than 75 years of experience. Our whole business is communications and our stock in trade is service. We have the experience-tested equipment and the skilled manpower to deliver just as much communications as you need—and can adjust to more or less service, as your needs change.

You can measure our experience in delivering communication services in miles, in years, or in numbers of customers and you'll find it unequalled. Our nationwide network of microwave radio, wire and cable stands ready to meet your needs.

• • •

Your Bell Telephone Company will be glad to study your communications problems and needs without charge.

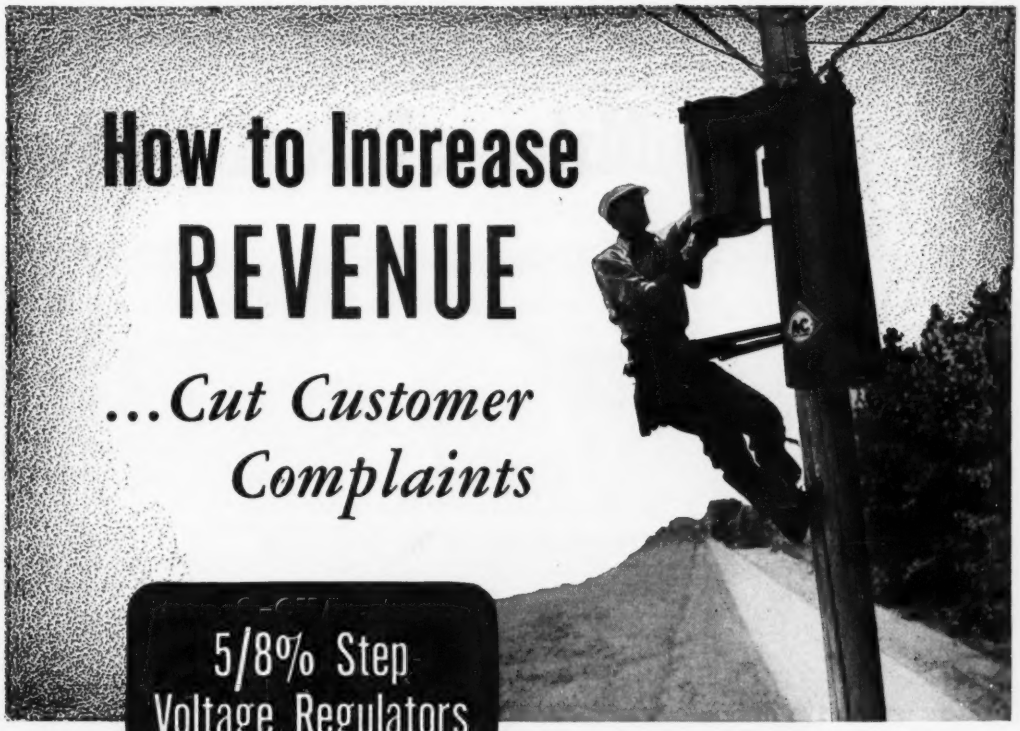
PRIVATE-LINE TELEPHONE

TELETYPEWRITER

MOBILE TELEPHONE

METERING CHANNELS

BELL TELEPHONE SYSTEM



Power Company Regulates Entire System — finds it pays off with double return

HERE'S HOW ONE electric power executive puts it: "We have regulated our entire system with Allis-Chalmers AFR (power) and JFR (distribution) regulators and we have noticed a substantial increase in revenue. Also, we have completely eliminated all complaints due to low voltage and this alone is worth more than the small cost of the regulators."

You get properly regulated voltage with Allis-Chalmers ⅝% step voltage regulators. The narrow ± 1 volt band provides accuracy. The voltage integrator permits the regulator to meet specific load conditions. And 20% range of regulation makes it possible to boost capacity, or to extend feeder length at minimum expense.

Allis-Chalmers Distribution Regulator

RATINGS AVAILABLE	7620 VOLTS — 15-50-100 AMPS 5000 VOLTS — 50-100 AMPS 2500 VOLTS — 100-200 AMPS

TIME TESTED UNIT OFFERS REGULATION AT LOW COST

Twenty years of design and development bring you proved durability at low cost. Take the tap-changing mechanism for example. It has stood up under life tests of 5,000,000 operations — equivalent to 100 years of operation. Low initial cost, long life, and low maintenance requirements add up to low cost regulation with Allis-Chalmers ⅝% step voltage regulators.

Get the complete story. Write or call your nearby A-C district office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3748

ALLIS-CHALMERS

Originators of ⅝% Step Regulation

More Miles of Cost-Cutting

INSTALLATION • The Emporium Stone Building, Stoneson Development Project "Stonestown," San Francisco, California.

Electrical Contractor: Charles A. Langlais Co.

Electrical Conduits: Rome • EMT.

Rome • EMT straight lengths are available in ½", ¾", 1", 1¼", 1½" and 2" while 90° elbows are carried in ¾", 1", 1¼", 1½" and 2".

• Warehouse stocks located as follows:

Chicago, Illinois
Dallas, Texas
Denver, Colorado
Los Angeles, California
Salt Lake City, Utah
San Francisco, California
Seattle, Washington
St. Paul, Minnesota
Torrance, California

Rome • EMT for San Francisco

Speeds up Wiring of "Stonestown's" Big Emporium Store

Easy workability—resulting in real *savings*—was an important factor in the choice of Rome • EMT electrical metallic tubing for "Stonestown's" big, new Emporium store.

The size of the project (286,000 sq. ft. in area and three merchandising floors) made it obvious to the electrical contractor that he needed a *lightweight* metallic conduit that could be installed quickly and economically . . . yet one which offered the utmost in safety and durability. The answer—Rome • EMT.

Lightweight Rome • EMT is easy to handle and bend. Simple compression type fittings eliminate time-consuming threading for connections. A mirror-smooth interior finish permits easy fishing and pulling. There are no burrs to slow up work or injure expensive cable.

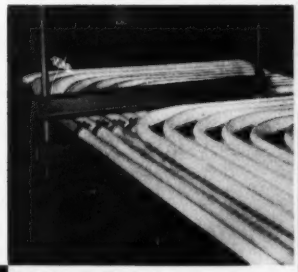
What's more, Rome • EMT provides exceptional protection against corrosion and abrasion. It has an electro-galvanized exterior with an even, solid zinc coating. Diameters and wall thicknesses are unusually accurate. Underwriters approved, it exceeds all standards for thin wall raceways.

To further assure a safe, permanent power supply, more than 350,000 ft. of Rome wires and cables were used in the Stonestown development.

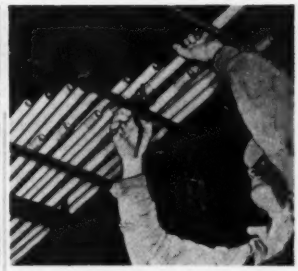
You will find it to your advantage to specify Rome • EMT, as well as Rome wires and cables for every wiring job. Contact your nearest Rome Cable office for help in planning your requirements.

For unexcelled wire and cable performance:

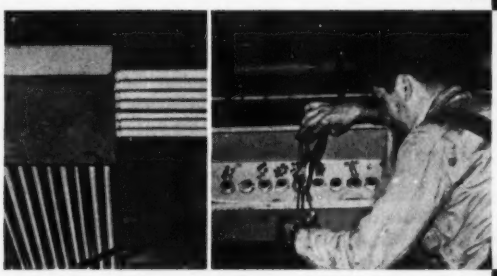
RoZone® **RoLene**
RoMarine **RoFlex**
RoPrene® **RoBarn**
Rome Synthinol®



EASY TO BEND • The simplicity of bending Rome • EMT makes it readily adaptable to any layout.



EASY TO HANDLE AND CONNECT • Rome • EMT is exceptionally light in weight . . . permits simple, one-man handling with threadless compression type connectors.



EASY TO FISH • The interior surface of Rome • EMT is "clean as a shotgun barrel" with antifriction high-gloss finish.

It Costs Less to Buy the Best

ROME CABLE
Corporation
ROME • NEW YORK
and
TORRANCE • CALIFORNIA

ROME CABLE ROME, N.Y.

WESTERN SALES OFFICES AND WAREHOUSES

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see to it that you get Efcorlets

Efcorlets for *easier, longer-lasting* connections!

Here are ruggedly-made iron conduit bodies that can be installed with the maximum of ease and a minimum of effort. EFCORLETS are newly engineered with accent on durability and trouble-free performance. EFCORLETS get that way, because they're made that way! Carefully made of high tensile strength iron, EFCORLETS are threaded so that the conduits will *never* shake loose.

Efcorlets for:—Clean, carefully gauged threads • Maximum room for wire pulling and splicing • Rounded and bushed openings • Large radii to protect conductor insulation • Threaded straight to insure perfect conduit alignment • Interchangeable with almost all other round bodies.

Look for the attractive Red and Black carton

For FREE illustrated literature and price lists, contact your nearest wholesaler.

Warehouses In All Principal Cities

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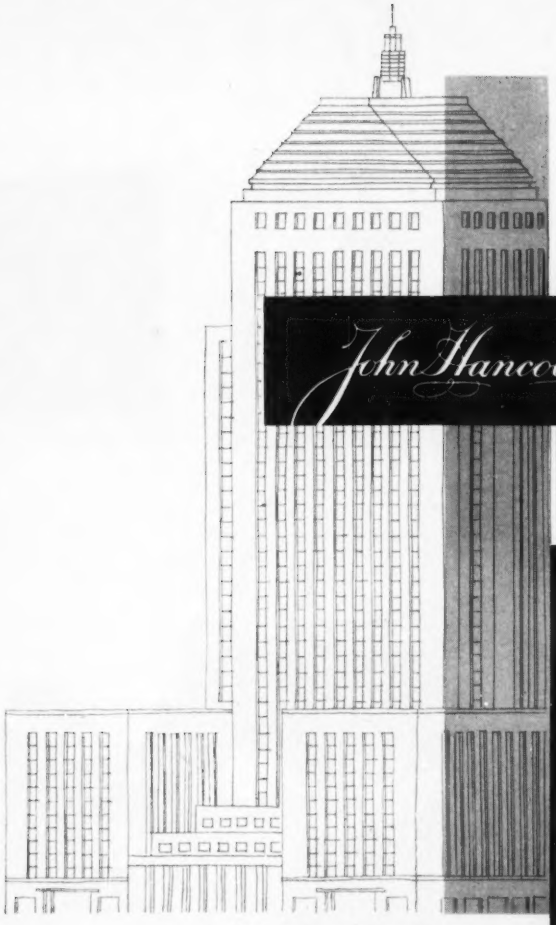
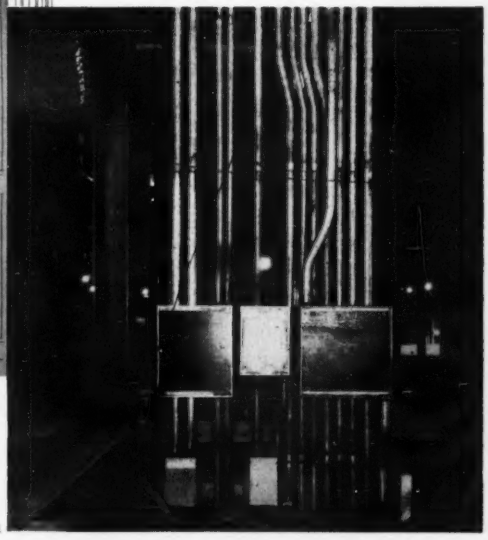
SOLD THROUGH WHOLESALERS ONLY!



John Hancock took out insurance against wiring troubles



... with 70 miles of

SPANG "CENLACO" CONDUIT

Boston's most modern skyscraper is the home of the John Hancock Mutual Life Insurance Company—and an outstanding example of *good* electrical planning.

Throughout the entire 26 stories there are innumerable, ingenious electrical design features that insure the extra continuity of service and the extra safety to personnel stipulated by the owner. Which makes the 100% use of Spang "Cenlaco" Conduit, from 500,000 CM secondary feeders to circuit runouts, particularly significant.

It's additional evidence of the reliance that prominent owners, contractors and architects place on the uniformity and dependability of quality-controlled Spang "Cenlaco" Conduit.

If *you* need conduit for any purpose, be sure and specify Spang "Cenlaco", "Central Black", "Central White" or "Central EMT". You'll like the consistent high quality—and the ease with which these *better* conduits can be cut, threaded, bent.

OWNER: John Hancock Mutual Life Insurance Co., Boston
ARCHITECTS: Cram & Ferguson, Boston
ENGINEERS: Hixon Electric Company, Boston
GENERAL CONTRACTORS: Turner Construction Company, Boston & New York

SPANG-CHALFANT
Division of The National Supply Company
GENERAL SALES OFFICE
GRANT BUILDING, PITTSBURGH 30, PA.
District Offices and Sales Representatives in Principal Cities

DOWN IT GOES New 500-kva G-E standardized network transformer being lowered into vault on Snow Street, Providence, Rhode Island. Vault previously housed a standardized 300-kva unit.

Load growth in Providence easily met by network system

New 500-kva G-E network transformer nearly doubles the capacity at this location as it replaces a 300-kva unit . . . using the same vault and cable connections.

In city after city secondary networks continue to demonstrate their flexibility and economy for meeting today's load growth—on an orderly, step-by-step basis—without any rearrangement of secondaries or service entrances.

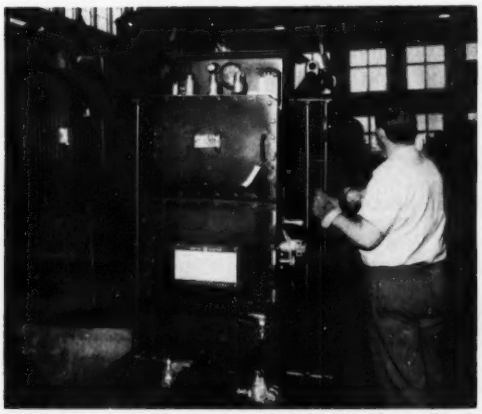
Providence, Rhode Island, provides a recent example. Load in the business district around Snow Street was climbing, due to increasing use of air conditioning, higher levels of illumination and general business expansion. Narragansett Electric, the utility, foresaw the need for additional capacity and simply ordered a new 500-kva General Electric standardized network transformer.

TRANSFORMER EASILY INSTALLED When the new unit arrived, it was placed in storage until actually needed. Then, utility crewmen removed the existing 300-kva unit and lowered the new 500-kva unit into the vault. It was tapped in on the secondary grid without interrupting service.

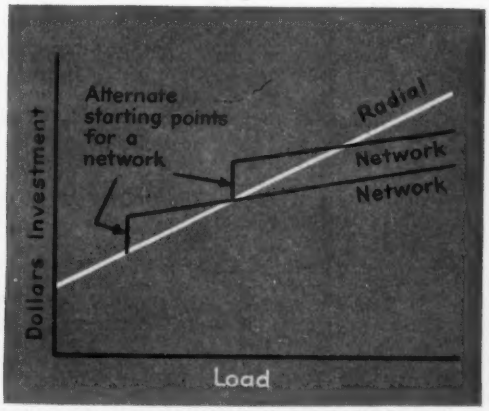
And that's all there was to it! Since both units were standard, no trouble was encountered in replacing the 300-kva unit with a 500-kva unit—the same vault and even the same cable connections were used!

HELP FOR YOUR SYSTEM If you're struggling to accommodate new loads by perpetuating a radial system and your load density has risen to approximately 10,000 to 15,000 kva per square mile, it may be time for you to investigate the flexibility and economy of a secondary network.

For help in solving your network problems and for complete information on the advantages of G-E standardized network units, see your local G-E Apparatus sales representative. Or write for Bulletins GEA-5024 and GEA-2017. General Electric Company, Schenectady 5, New York. 402-127



HELD IN STORAGE Narragansett Electric, Providence, Rhode Island, foresaw need for additional capacity and ordered new 500-kva unit which was held in storage until needed. With the new unit on hand, utility crewmen were able to schedule its installation well in advance.



IT PAYS TO START A NETWORK. Although the change from a radial to a network system means some initial expense, future increases in capacity require less investment with a network. And with a growing load, the sooner the network is started, the lower the ultimate cost.

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Aluminum Conductor for Distribution?

ARE PREFORMED ARMOR RODS *NEEDED*?

For protection against vibration, "Preformed Armor Rods" are *not necessary*, BUT they are *definitely needed* for:

1—Splicing

2—Dead-ending

3—Repairing

4—Conductor covering . . . to protect against arc-over, pitting, abrasion and corrosion.

5—Tapping . . . to prevent conductor corrosion, overheating and mechanical damage from concentrated stresses.

During the recent A.I.E.E. and E.E.I. Conventions in Cleveland, many distribution and transmission engineers visited our Factory and Laboratory to see for themselves why Preformed Armor Rods are the answer for connecting and supporting ALUMINUM CONDUCTORS.

For details of the PLP exclusive advantages, see your nearest PLP Representative or write or . . .

TELEPHONE CLEVELAND: **EXpress 1-3571**

PREFORMED LINE PRODUCTS COMPANY

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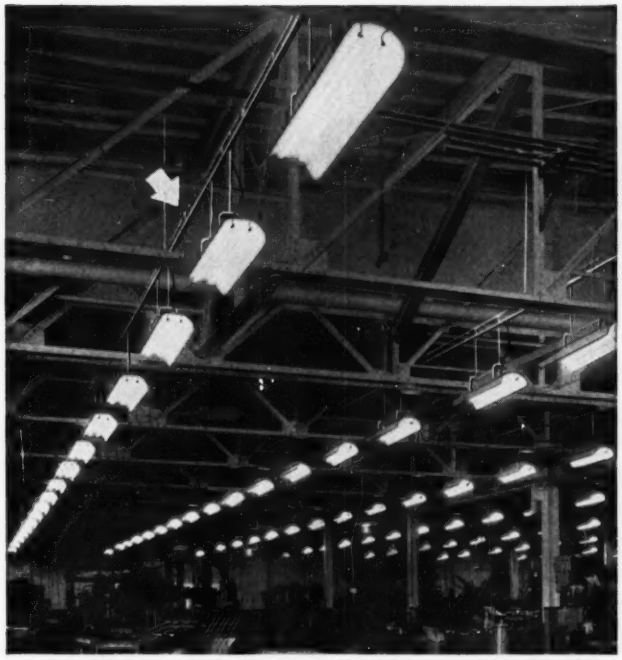
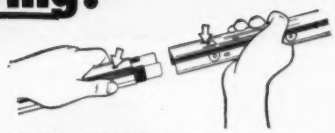
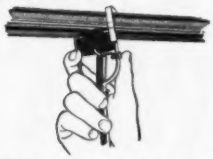
Lighting where and when you need it ... without rewiring!



Safe. Sturdy. Current-carrying Trol-E-Duct bus bars are totally enclosed. Duct itself (arrow) supports fixtures. Continuous slot in bottom of duct means you can move lights (or small portable tools on trolleys) anywhere, any time without rewiring. *It's every inch an outlet!*



Quickly installed. Sections go up in a hurry, join without bolting. Sections are prefabricated, standardized in lengths of from 1 to 10 feet. Entire duct can be dismantled and reinstalled easily without a scrapped part.



Convenient. Lighting twist-out plugs slip into duct without cutting off power or upsetting production schedules. Plugs ground on steel casing before contacts touch bus bars, slide in with simple twist anywhere along duct.

Mobile Trolleys. Smooth-rolling trolleys are available to carry small, portable power tools, speed up production. Trolleys ride inside duct on metal wheels. Constant spring pressure against bus bars assures perfect contact.

BullDog Universal Trol-E-Duct lets you add, remove or rearrange lights quickly. No loss of man-hours, money, material.

When it comes to moving lighting fixtures, costs usually skyrocket. Not so with BullDog Universal Trol-E-Duct.

For here is a *truly mobile, fully flexible* lighting system at its money-saving best.

Every inch of Trol-E-Duct is a potential tap-off for lights or small power tools. To move lights or add new ones when you change machine layout, just slip twist-out plugs or trolleys in or out of continuous slot in bottom of duct. Duct itself supports lighting fixtures.

That's all. No rewiring needed. No production lost through shutdowns. No wasted man-hours or scrapped material, either, as with fixed outlet systems.

Trol-E-Duct is prefabricated, standardized and salvable. Installs in a hurry. Can be dismantled and reinstalled without loss.

Get all the facts on this modern, low-cost lighting system that fits present needs . . . provides for future needs, as well. Contact a nearby BullDog Field Engineer. He'll show you an installation in your area that will speak for itself. Or, for descriptive bulletin, write BullDog direct, won't you?

BULLDOG ELECTRIC PRODUCTS COMPANY
DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES
IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO
PIONEERS IN FLEXIBLE ELECTRICAL DISTRIBUTION SYSTEMS

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ALEC

ALUMINUM 'TIP-TOP'® WEATHERPROOF

Twenty years ago, ALECTRAL pioneered the use of aluminum as a conductor for all purposes. This General Cable brand was assigned to wires and cables of high tensile strength aluminum, engineered as solid or stranded conductors for transmission and distribution service.

ALECTRAL "TIP-TOP" Weatherproof, a highly weather resistant wire — neoprene jacketed — provides these enduring advantages:

1. **Strips easily and cleanly, minimizing the possibility of nicking**
2. **Clean conductor wires permit full benefit of inhibitors and assure positive connections**
3. **Provides high resistance to abuse, either mechanical or from sun's rays, rain, heat and cold**
4. **Permits easy installation and re-use where desired.**

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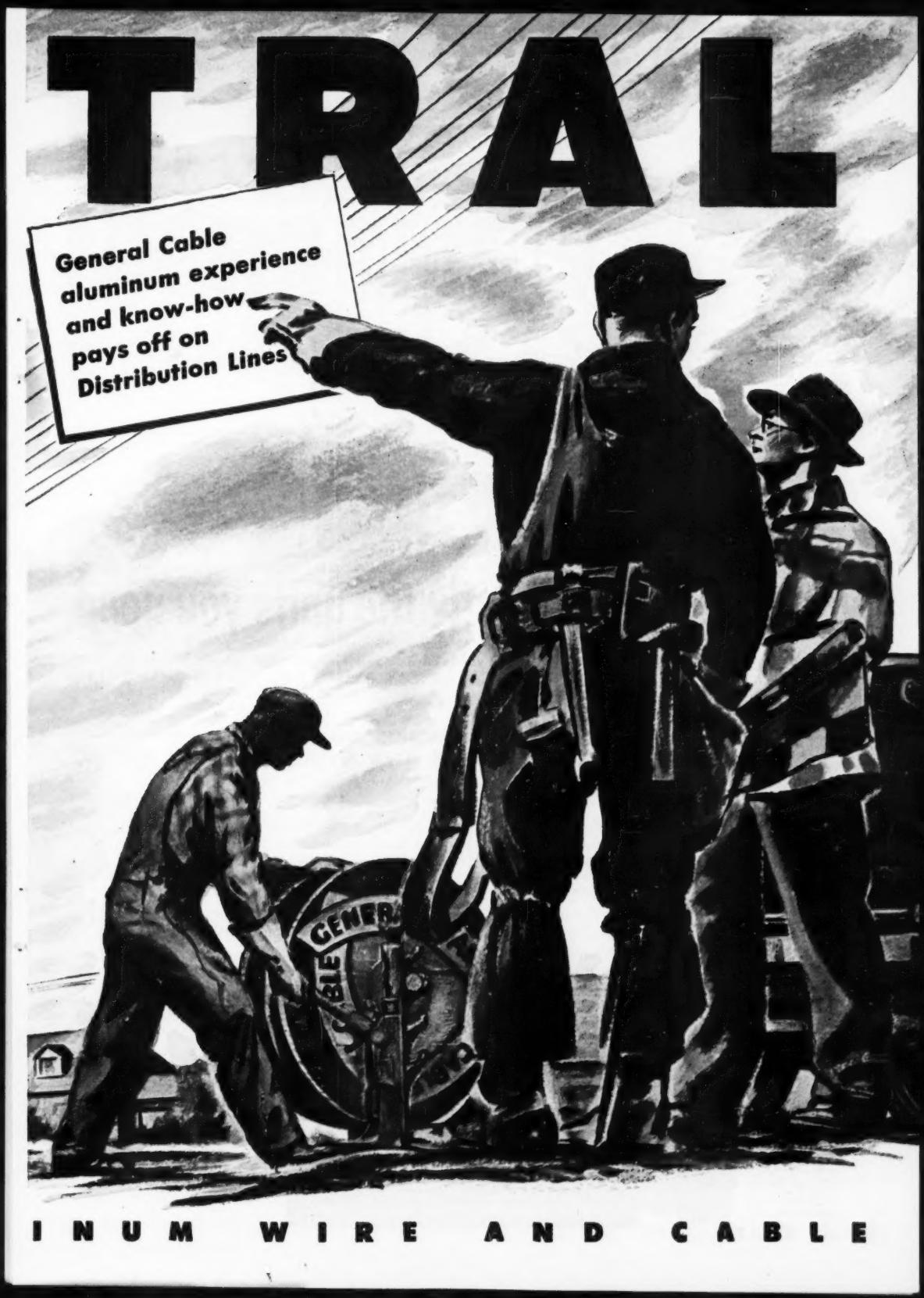
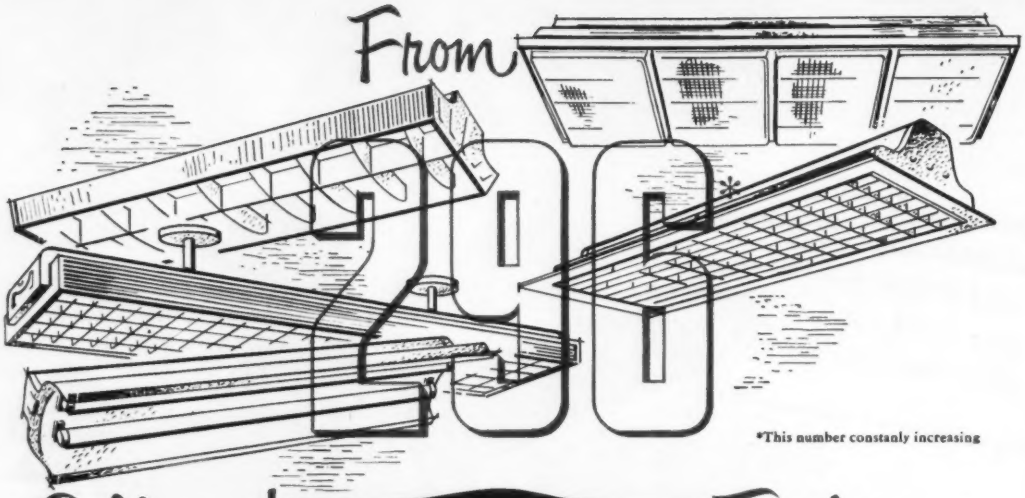
"More Power to You"®

GENERAL CABLE GENERAL CABLE GENERAL CABLE

PIONEERS IN ALUM


TRAL
General Cable
aluminum experience
and know-how
pays off on
Distribution Lines
INUM WIRE AND CABLE



*This number constanly increasing

Different FLEUR·O·LIER Fixtures

you can specify exactly the units you need

You can get precisely the luminaires you need for any school, hospital, office or store installation from the nearly 300 different FLEUR-O-LIER fixtures made by 22 leading manufacturers.

AND ON EVERY UNIT YOU SPECIFY, YOU GET THESE EXCLUSIVE FLEUR-O-LIER ADVANTAGES:

1. The FLEUR-O-LIER Index System Rating. This evaluates illuminating characteristics, shielding, brightness, etc.

2. Complete photometric test data including distribution curves and coefficients of utilization.

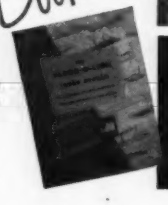
3. Certification. Electrical Testing Laboratories certifies the units comply with rigid specifications covering electrical and mechanical construction.

4. All FLEUR-O-LIER fixtures use Certified Ballasts and Certified Starters.

Lighting Satisfaction **is assured when you specify FLEUR-O-LIER**

Free Booklet

Write for classified list of Fleur-O-Lier units and new booklet giving details of Fleur-O-Lier Index System.

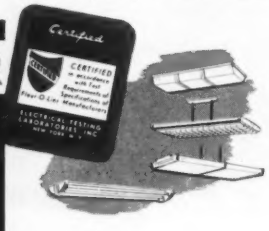


FLEUR·O·LIER

Manufacturers

2116 Keith Building • Cleveland 15, Ohio

Fleur-O-Lier is not the name of an individual manufacturer, but of a group of fixtures made by leading manufacturers. Participation in the Fleur-O-Lier program is open to any manufacturer who complies with Fleur-O-Lier requirements.



EDISON selects NICHROME* V WIRE

for new, high-accuracy, long life MINIATURE RELAYS

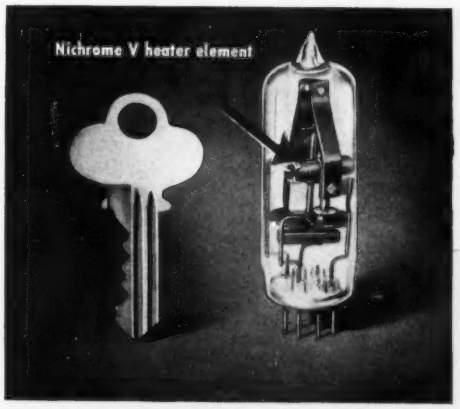
Edison's new space-saving miniature thermal time-delay relays, scarcely larger than a door key, are built to handle big jobs—accurately and dependably, day in and day out.

They offer the simplest, most trouble-free, and least expensive way of introducing delay periods into electric circuits. Thus they are ideal for control functions relating to cathode protection, motor starting, "hold-overs," overload protection, automatic cycling, and numerous applications where magnetic relays have hitherto been used.

Since accuracy of operation depends, essentially, upon the consistent performance of the extremely small heater, wire of this winding must be *exceptionally stable*—be capable of retaining its physical and electrical characteristics *indefinitely*.

Nichrome V alloy, unique product of Driver-Harris, fulfills these all-important conditions. With a temperature co-efficient of resistance that remains constant between 20°C. and 500°C.—a considerably wider temperature range than actually here involved Nichrome V assures uniform, precision performance. And being highly resistant to heat and corrosion, it assures *outstanding stability for a lifetime.*

This particular application serves to emphasize other desirable properties which make Nichrome V wire extremely suitable for heating, or resistance units required to occupy very limited space. For example: Only a few milliamperes of current are utilized by the Edison miniature thermal relay. The heater winding must, therefore, have high resistance in order to produce sufficient heat to deflect the bi-metal contact strip. The electrical resistivity of Nichrome V (650 ohms/cmf) permits a short length of one-mil-diameter wire to be used, thus saving space; and the high tensile strength of Nichrome V (200,000 p.s.i. at 20°C.) eliminates breakage in winding operation.



New Edison Time-Delay Relay — Model 207 Standard Voltages 115—27.5—6.32 Hermetically sealed. Vibration and shock proof. Ambient compensated −60°C. to +85°C. Wide range of delay periods available.

For products whose successful operation depends upon application of stable electrical alloys, highly resistant to heat and corrosion, you'll find Nichrome and Nichrome V offer *plus values* that are unequalled. At the present time, these alloys are on allocation; but if you will let us have your specifications, we shall be glad to make recommendations and serve you to the best of our ability.

Nichrome* is manufactured only by

Driver-Harris Company

Western Representative: **ANGUS-CAMPBELL, INC.**

917 Bryant St., San Francisco 5320 Santa Fe Ave., Los Angeles

Main Office and Plant: HARRISON, NEW JERSEY

*T.M. Reg. U.S. Pat. Off.

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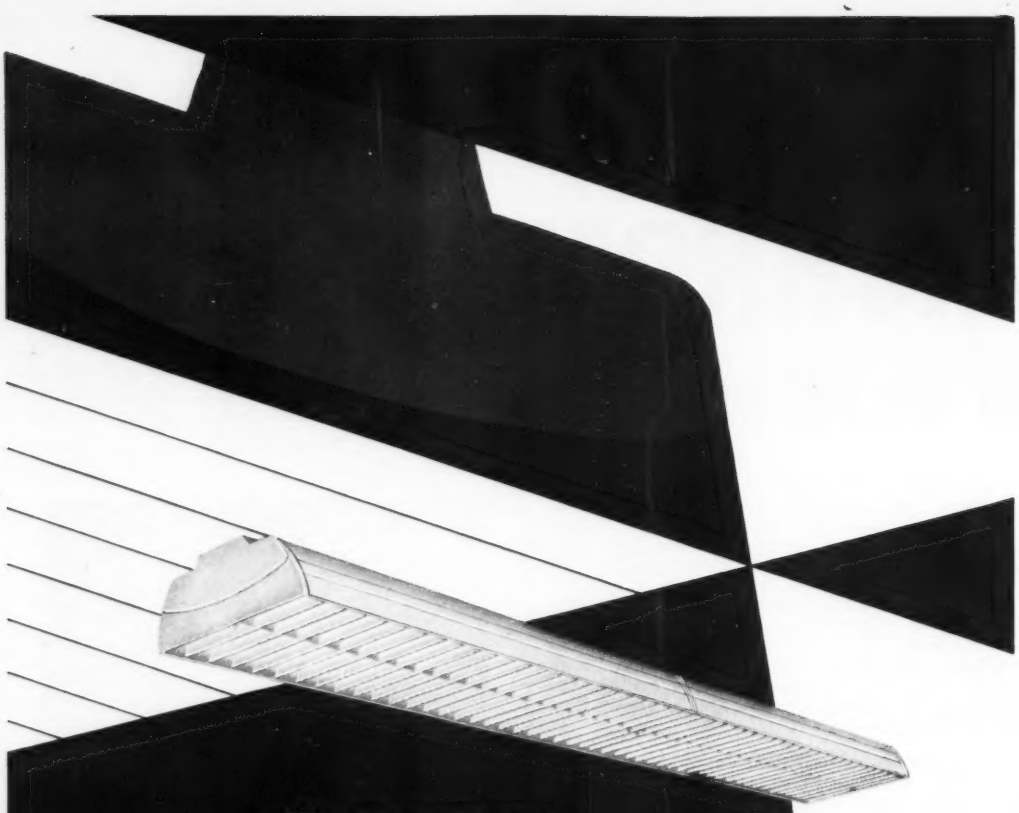

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new and most advanced for school lighting the fixture that gives you L.O.C.

L.O.C. (low overall cost — cost of fixture, cost of installation, cost of maintenance) is the true cost of any lighting fixture — an important consideration in buying or specifying. MILLER LEXINGTON gives you L.O.C. And further, it gives you ideal lighting which will minimize eye-strain and fatigue. The LEXINGTON embodies the latest advancements in illumination engineering. Built into it is the experience gained through 108 years of pioneering and progress in GOOD LIGHTING. It is the latest addition to MILLER'S complete line of luminaires for a wide range of commercial and industrial requirements.

↓ Write or wire today —

— for full details of the new MILLER LEXINGTON luminaire, explaining its extremely low brightness and overall efficiency at L.O.C. (low overall cost.)

Miller field engineers and distributors are conveniently located for nation-wide service.

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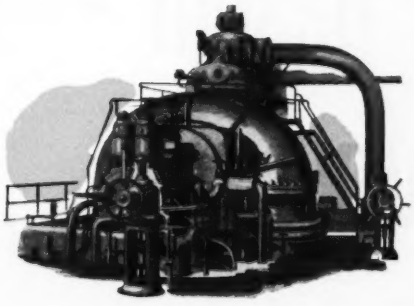
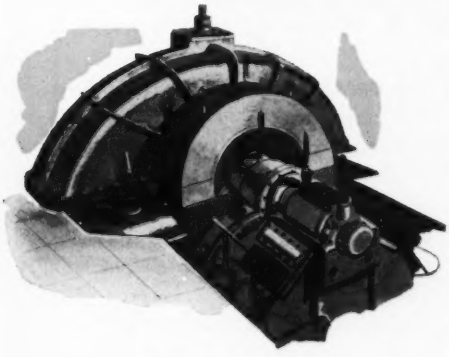
TO CUT YOUR MAINTENANCE COSTS

ON TURBINES Use Shell Turbo Oil





An inhibited oil so successful in staving off oxidation and rust that it has set records for length of service ...for low upkeep costs

WHAT THIS OIL DOES

Shell Turbo Oil is a *turbine lubricating oil* from the ground up. Shell takes specially selected base stocks, fortifies them with an additive to resist oxidation, another additive to fight off rust. The result of this care is an inhibited oil that provides long, trouble-free turbine lubrication. *The original charge of Shell Turbo Oil has been in one installation since 1941!*

WHAT THAT MEANS TO YOU IN $ AND ¢

No matter what kind of turbine you operate...steam or hydro, stationary or marine, in power generation or mechanical drive...you can count on long, trouble-free lubrication with inhibited Shell Turbo Oil. And of course that means a real dollars-and-cents saving on maintenance costs. Get the full story from your Shell representative.

SHELL

Remember, only Shell offers you
SHELL TURBO OIL
the oil that cuts turbine maintenance costs

Another Westinghouse Relay Development

Here's the greatest advance in Basic Relay Design in Half a Century!

The New CO Relay

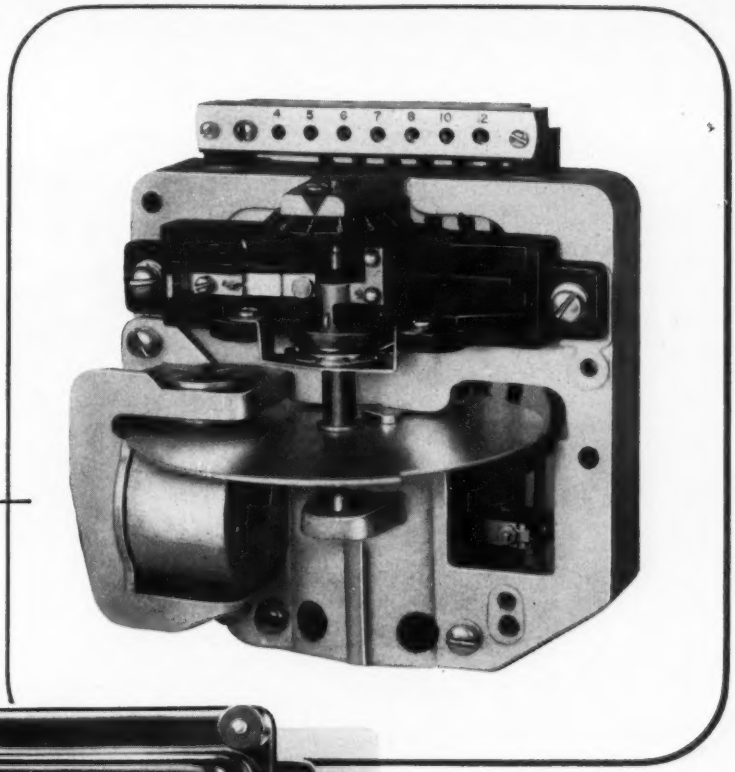
This new CO Relay brings you remarkable, new operating benefits in overcurrent relaying. The reason—the most significant advance in relay design since the introduction of the induction disc relay! We call it simply the "E" element—but look how it contributes to superior relay performance.

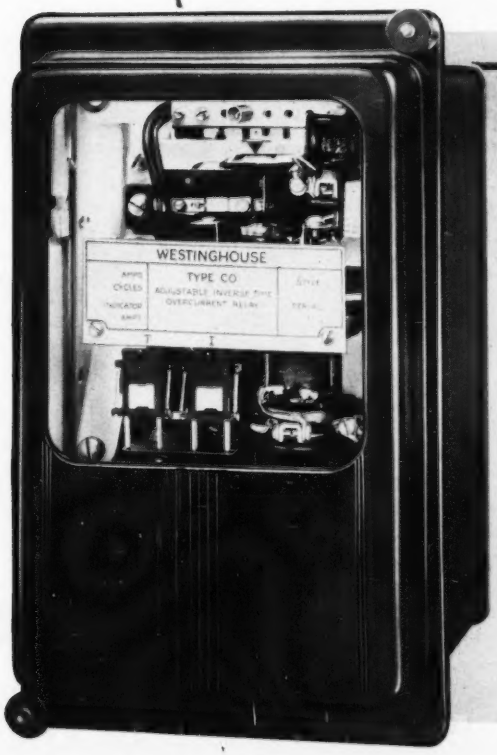
FOR GREATER ACCURACY . . . Magnetic plugs control the saturation characteristics to provide accurate timing over the entire operating range. Two independent adjustments provide accurate pickup at tap value of current for all disc positions. Micrometer adjustment of permanent magnet, by means of a "keeper" screw, which provides accurate adjustment without moving the magnet. Thus, four separate and independent tolerance controls, instead of only two as found on earlier relays, assure you of meeting time curves without compromise.

FOR GREATER FLEXIBILITY . . . A "Two-in-one time curve." Inverse and very inverse relays are identical except for calibration and, therefore, may be changed from one curve to the other (or intermediate curve).

FOR GREATER RELIABILITY . . . New positive-action tap block with "self-positioning" taps give metal-to-metal contact between tap terminal and tap plate. Other features contributing to reliable relay protection include: rigid one-piece, die-cast frame—cast alnico magnet—and non-geared design.

Ask your Westinghouse Representative to show you the new CO Relay—he'll be glad to go over it feature by feature with you—or request a demonstration by writing to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-40410





YOU CAN BE SURE...IF IT'S

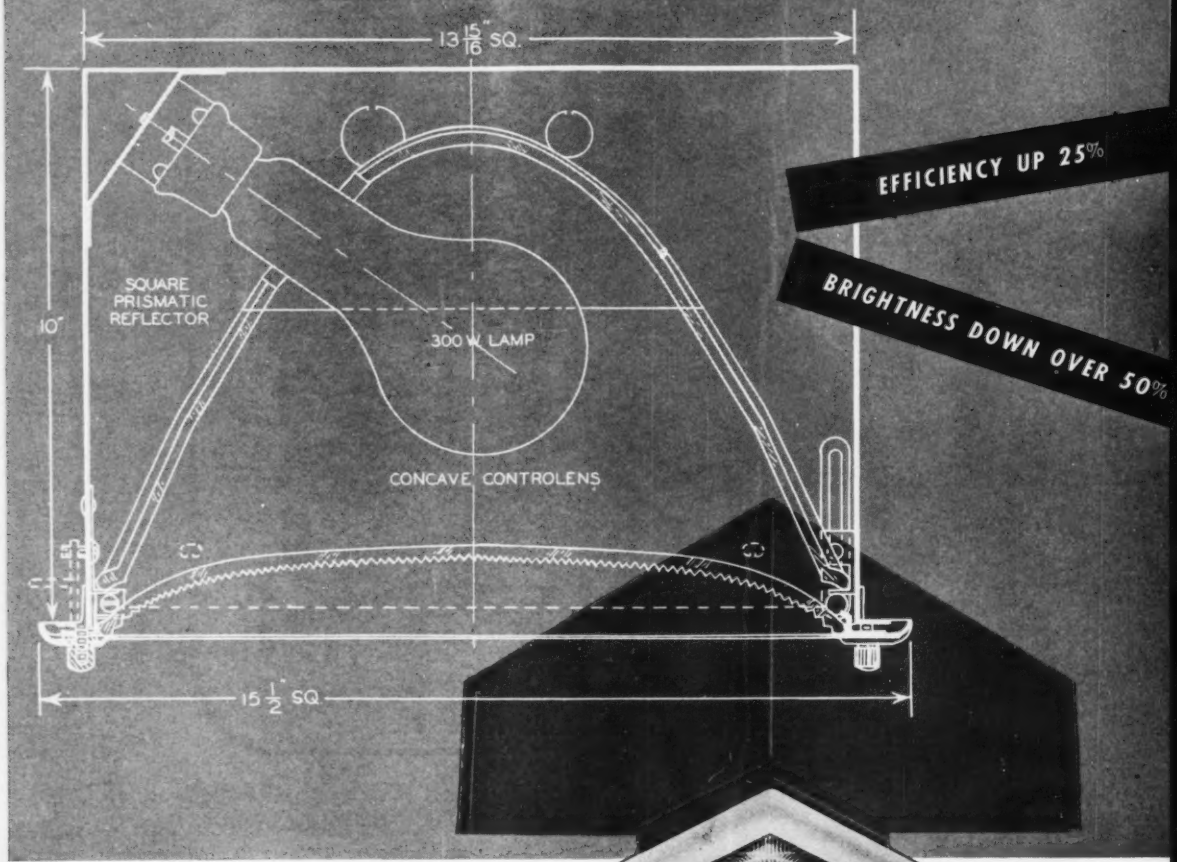
Westinghouse

RELAYS

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

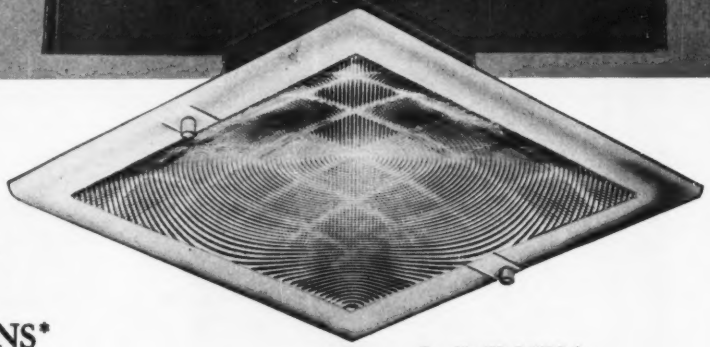
"THE TYPE CO OVERCURRENT RELAY IS AVAILBLE IN FLEXITEST OR STANDARD RECTANGULAR PROJECTION CASE."

HOLOPHANE DEVELOPS AN ENTIRELY NEW CONCEPT IN LIGHTING



EFFICIENCY UP 25%

BRIGHTNESS DOWN OVER 50%



No. F-1570 HOLOPHANE In-Bilt Unit with LO-BRITE* Concave CONTROLENS*

- **HIGHER EFFICIENCY... Stepped up 25%**
- **LOWER BRIGHTNESS... cut by more than 50%**
- **CONCAVE CONTROLENS shields brightness from the observer**
- **LARGER LENS and NARROWER TRIM provide the ideal proportion for distinctive design**

Specify NO. F-1570 for

CLASSROOMS
OFFICES
DISPLAY ROOMS
STORES
HOSPITALS
PUBLIC BUILDINGS

Architects and engineers are invited to write for complete data. No obligation of course.

* Trademark

HOLOPHANE COMPANY, INC.

Lighting Authorities Since 1898 • 342 MADISON AVENUE, NEW YORK 17, N.Y.

THE HOLOPHANE COMPANY, LTD., THE QUEENSWAY, TORONTO 14, ONTARIO

KILLARK ALUMALLOY

THE 20TH CENTURY METAL

FOR
NON-CORROSIBLE
ELECTROLETS

KILLARK ST. LOUIS

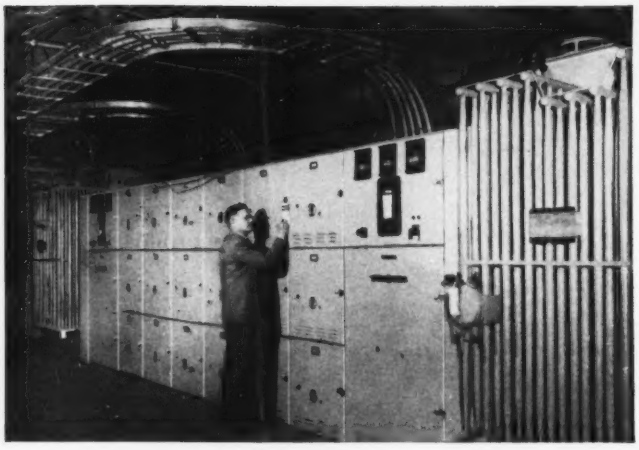
Killark

ELECTRIC MANUFACTURING COMPANY

VANDEVENTER AND EASTON • ST. LOUIS 13, MISSOURI

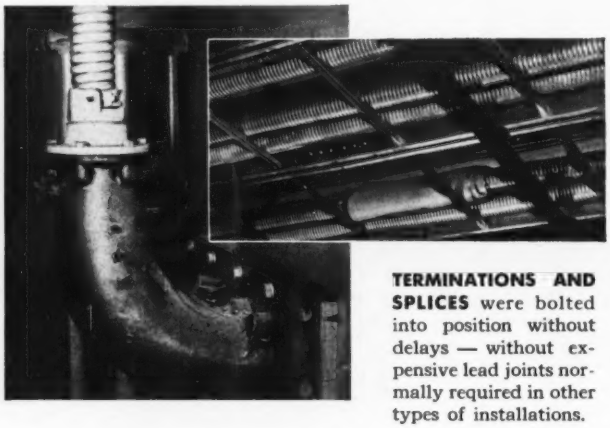
TANK PLANT GETS ROLLING IN RECORD TIME

... with G-E Interlocked Armor Cable

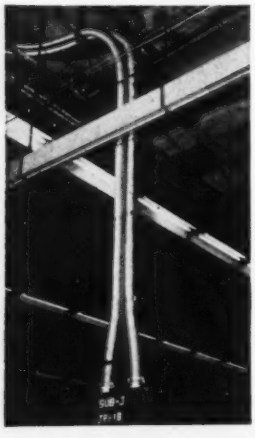


FROM WAREHOUSE TO TANK PLANT in less than a year. That's the latest record of this midwest tank plant. This 53-acre tank plant was sped into production with flexible, adaptable G-E interlocked armor cable installed on Stacey aluminum racks.

INSTALLATION SPEED was a real advantage on main-feeder runs. Racks were quickly hung from ceiling and cables were pulled into place. There was no need to fit raceways and pull cables through.



TERMINATIONS AND SPLICES were bolted into position without delays — without expensive lead joints normally required in other types of installations.



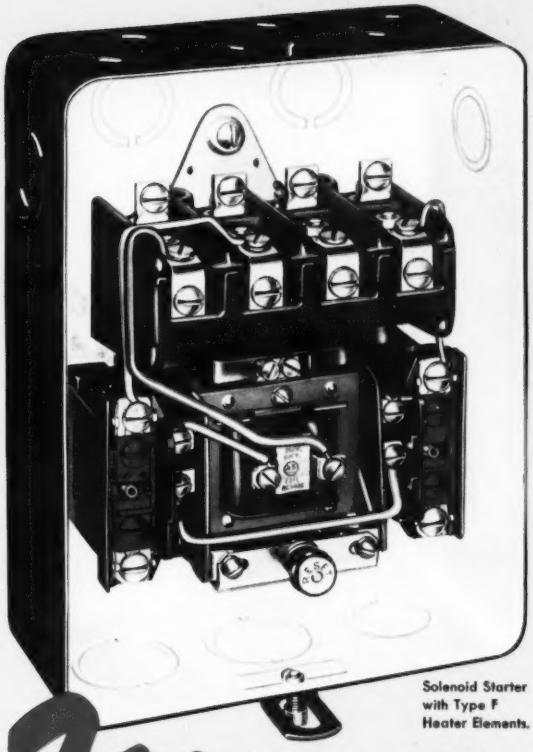
NO THREADING, NO PRE-BENDING required on this run. Hours of bending time were saved on this secondary circuit. Threading and fitting at panel box were eliminated.

COMPLETE DATA ON ADVANTAGES

Get the story on installation speed with G-E interlocked armor cables from booklet 19-211. Write Section W11-725, Construction Materials Division, General Electric Company, Bridgeport 2, Conn.

You can put your confidence in—

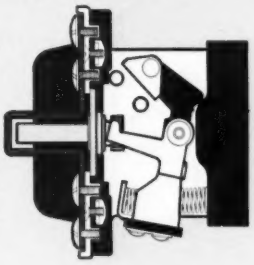
GENERAL ELECTRIC



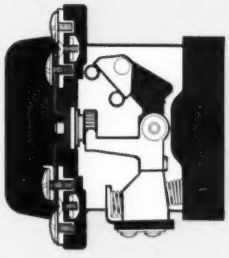
Solenoid Starter with Type F Heater Elements.

THERMAL OVERLOAD RELAY WITH CONVENTIONAL DUAL UNIT

Ordinarily, A-B overload relays have a soldered ratchet spindle (yellow) that is separated from heater strip (red). Heat radiated by overload heater melts solder on spindle and releases ratchet.



THERMAL OVERLOAD RELAY WITH SUPER-FAST COMBINATION UNIT



New, super-fast element has soldered ratchet (yellow) brazed directly on heater strip (red), permitting quick transfer of heat to melt the solder and thereby release the ratchet.

New SUPER-FAST COMBINATION UNIT

for protecting hermetically sealed motors used in refrigeration compressor service

Combination Unit
for super-fast operation

TYPE F ELEMENT
Soldered ratchet spindle is brazed to heater for rapid conduction of heat to solder.

Most motors used for hermetically sealed compressors are cooled by the refrigerant circulated over the motor windings. They are worked beyond the limit of air-cooled motors, and have little overload reserve.

To give dependable overload protection to these hard-working motors, Allen-Bradley has added the new Type F quick-acting heater element. Its special construction, described above, makes it respond within a few seconds to any overload, and trips the overload relay before motor burnout occurs.

If you need motor controls that are quick-acting in case of overload, specify Type F combination elements for Allen-Bradley solenoid starters.

Dual Unit
for average operation

SPINDLE

HEATER

ALLEN-BRADLEY CO.
1316 S. Second St.
Milwaukee 4, Wis.

ALLEN-BRADLEY
OVERLOAD PROTECTION

A-B Quality

5-52-MR

Pick the right spindle to fit the starting cycle.

Insert the spindle in the A-B thermal overload relay.

The relay is ready for the heater element.

It's so easy to provide Starting and Running Protection with Allen-Bradley Thermal Overload Relays

INTERCHANGEABLE RELAY SPINDLES

TAN SPINDLE—for normal allowable locked rotor time and long starting time.

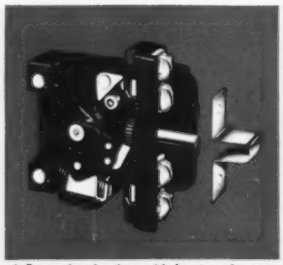
RED SPINDLE—for normal allowable locked rotor time and normal starting time.

GREEN OR GRAY SPINDLE—for low locked rotor current and short allowable locked rotor time.

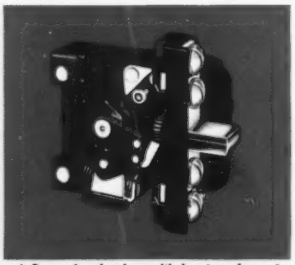
SUPER-FAST SPINDLE—for low locked rotor current and extremely short locked rotor time.

FIRST—to provide locked rotor protection—pick the overload relay spindle (see pictures at left) that matches the motor characteristics. There is an Allen-Bradley relay spindle to meet every need.

SECOND—to provide running protection—pick the heater element (see pictures at right) to fit motor full-load current. There is an Allen-Bradley heater element for every rating. This two-way protection is standard for all Allen-Bradley solenoid motor controls.



A-B overload relay with heater element detached to show the relay spindle.



A-B overload relay with heater element mounted in place over the relay spindle.

INTERCHANGEABLE HEATER UNITS

LOW RATING

MEDIUM RATING

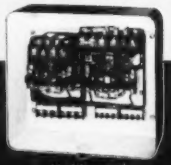
HIGH RATING

ALL ALLEN-BRADLEY SOLENOID MOTOR CONTROLS HAVE TWO-WAY OVERLOAD PROTECTION

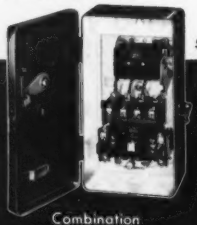
Manual Starter

Automatic Starter

Reversing Starter



Multispeed Starter



Combination Starter

5-52-MR

A-B Quality

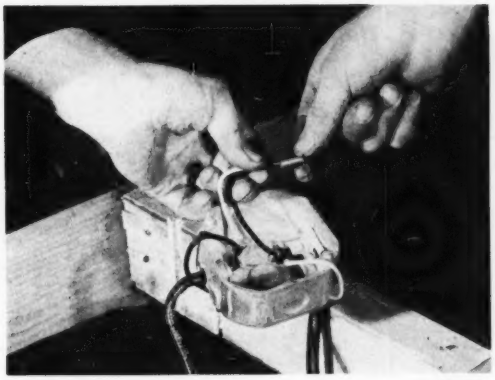
ALLEN-BRADLEY

SOLENOID MOTOR CONTROLS

QUALITY

ALLEN-BRADLEY CO.
1316 S. Second Street
Milwaukee 4, Wis.

PRODUCT NEWS



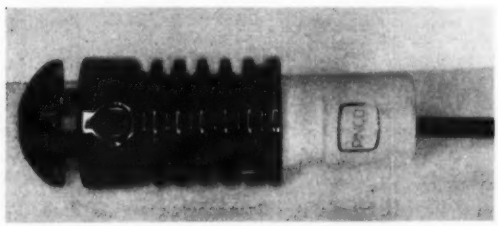
Spring-Type Connector

(1) Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul, Minn.

This new spring-type connector for making pigtail splices in electrical wiring cannot shake loose and requires no tools, according to the manufacturer, who recommends it for circuit wiring, fixture hanging and appliance hook-up. Designated the Scotchlok, it is said to give a tight permanent splice for single strand and multistrand wires up to gage 10 in more than 300 combinations.

Made of zinc-plated steel wire in the form of a tapered coil spring, the lubricated connector is screwed on the stripped ends of the wires with the fingers. A notched turning stem gives leverage during application and is then snapped off leaving a neat splice with no sharp ends.

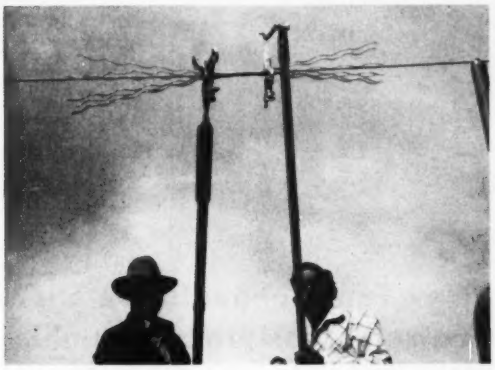
The coil spring design allows the connector to expand while being applied but gives a shake-resistant, tension grip on the wires when the splice has been made. The small diameter of the connector adds only a fraction of an inch to the diameter of the wires.



Redesigned Bushing

(2) Kuhlman Electric Co., Bay City, Mich.

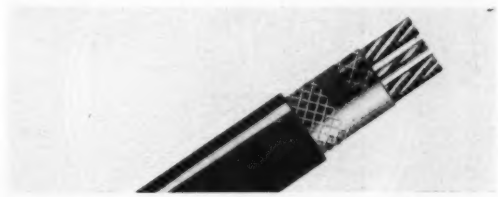
This Quick-Grip transformer bushing, which permits the lineman to make primary line connection without using tools, has been redesigned with a molded hard-rubber knob, although it retains the porcelain body. Formerly it was made with a dielectric consisting entirely of porcelain. In the new design the metal part is molded into the knob. The new knob is said to have a better shape for gripping, to weather well and to eliminate any risk of cracking or breaking.



Armor Rod Die

(3) A. B. Chance Co., Centralia, Mo.

Preformed armor rod dies to fit its tools for applying armor rods with hot sticks have been announced by this manufacturer, who states that, using the same method, preformed armor rods can be applied even faster than straight armor rods. It is stated that a complete armor rodding job on a 3-phase line can be done in less than two hours including the time required to mount hot-line tools on the pole and remove them. Advantage, according to the manufacturer, is in saving time required to apply end clips hot when straight rods are used.



Mining Machine Cable

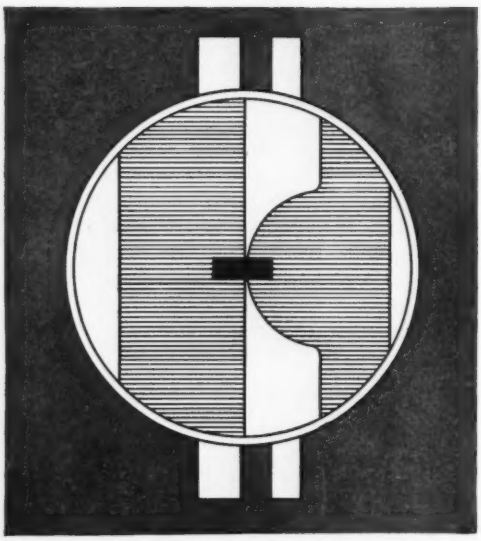
(4) Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.

This new portable mining machine cable is said to reduce the chance of shock hazard and arcing when a break occurs. It was designed to cut off the power the instant damage occurs to the positive conductor insulation. The cable is used in conjunction with a ground trip relay which, when energized, shuts off the power. It is particularly adapted for use with shuttle cars and other mobile mining machines, the manufacturer states.

new tap changer design

KEEPS TRANSFORMERS ON THE LINE . . . CURBS MAINTENANCE

New Tap Changer for De-energized Operation on Allis-Chalmers Power Transformers Combines Basic Principles and Precision Workmanship to Give Unexcelled Service Performance.



ONE CURRENT PATH PER CONTACT, established by rounded point on a flat surface, assures high contact pressure. Both magnetic and applied forces are concentrated at this single point on the contact surface.

THE IMPROVED PERFORMANCE found in the new Allis-Chalmers tap changer is the result of a radically different contact principle that insures cool, long-life operation and makes contact deterioration virtually impossible.

The tap changer is designed so that the current path on each contact is established under high pressure by means of a rounded point on a flat surface. The union is cool and positive. At the same time, flexible action maintains equal pressure on moving members, making them completely self-aligning . . . an important factor in service continuity.

Utilizes Magnetic Forces

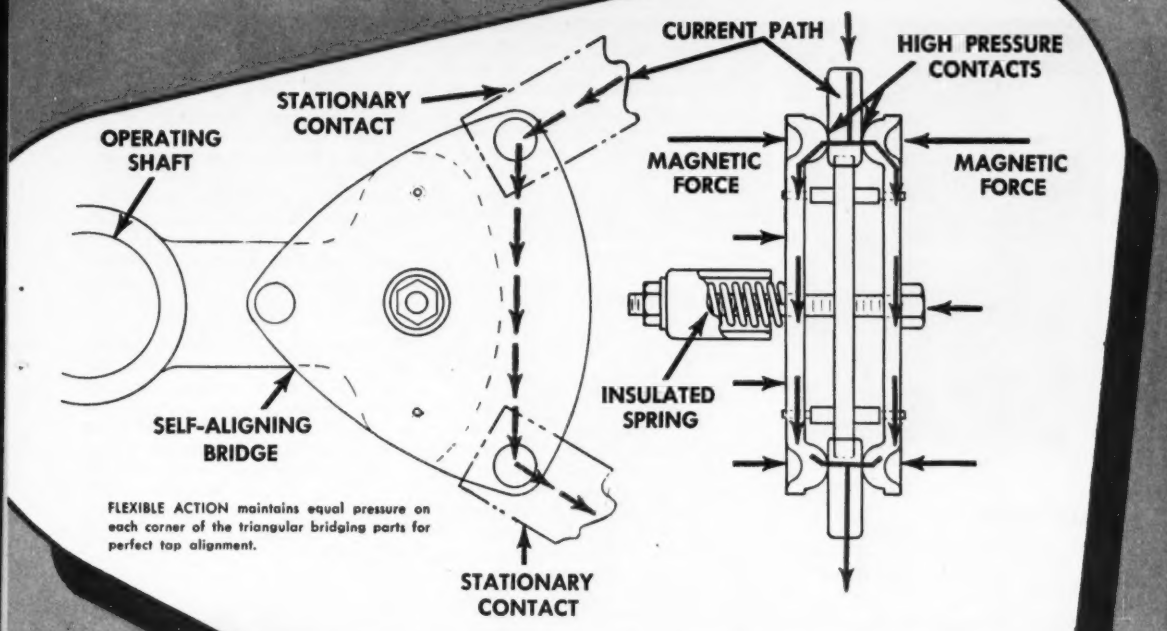
A distinctive feature of the new tap changer is the contact bridging member with parallel parts carrying current. By utilizing magnetic forces created by heavy current, contact pressure is actually increased. This automatically prohibits "throw open" action caused by short circuits on the electric power system.

Self-Cleaning Contact Action

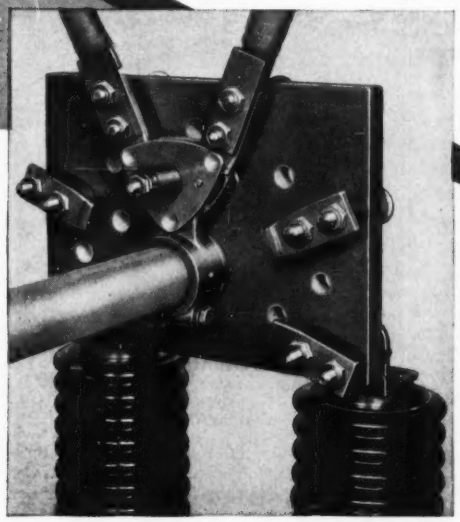
Magnetic forces added to a strong applied force provide a low resistant path for current. Self-cleaning action of contacts eliminates carbon growth and reduces heating.

Engineering of this kind can save you money on your next power transformer installation. Why not investigate its benefits today.

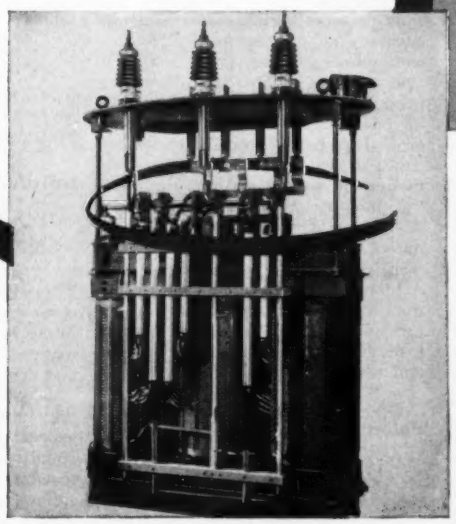
A-3644



FLEXIBLE ACTION maintains equal pressure on each corner of the triangular bridging parts for perfect tap alignment.



THIS VIEW of the new A-C tap changer shows moving contact member bridging the stationary tap lead connections. The tap changer employs copper-to-copper rounded point contacts. Voltage stresses and corona were reduced by keeping sharp corners and edges to a minimum.

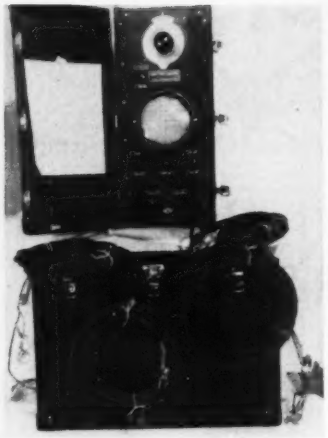


MOUNTED ABOVE the core and coil assembly, this new tap changer is easily accessible for periodic inspection through the cover handholes. Tap positions are changed on all phases simultaneously.

ALLIS-CHALMERS

MILWAUKEE 1, WISCONSIN

A-C ALLIS-CHALMERS



Fault Locator

(5) Echo Electronics Co., 3966 Peachtree-Dunwoody Road, Atlanta 5, Ga.

Designed for measuring the distance to a fault on an open-wire circuit, this fault locator is claimed to have an accuracy of plus or minus 2%. No computations other than interpolation from a calibration chart are necessary. The fault may consist of an open, partial open, short circuit, ground or a partial ground. The device comes in two carrying cases, one containing the output coupler, the other the pulse generator and oscilloscope. A 115-v, 60-cycle power source is required for operation; power requirement is 115 w.

In operation a pulse of very short duration is applied to the wire under test and the time measured that it takes the pulse to travel to the fault and return.

Potential Transformers

(6) Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

An improved line of indoor and outdoor potential transformers in the 2,400-v class, types PT and PTO, has a new crepe paper insulation that is vacuum dried and impregnated and has a high impulse and dielectric strength and a low insulation power factor. Available in either 45- or 60-kv full-wave impulse test level, the transformers meet the 0.3W, 0.3X, 0.3Y and 1.2Z metering accuracy classifications. Type C Hipersil cores are used.

The transformer is mounted in a single-piece, deep-drawn steel case with welded-on base. It utilizes a no-leak filling plug and new HV bushings mounted without bushing flanges. Single and double HV bushing combinations are available on the cover or at the end of the case. Cover-mounted bushings only can be supplied either with or without type BAL high-voltage fuses. Type PTO (outdoor) is available with cover-mounted bushings only, without fuses. Both types can be mounted in any position.

Chart Controller

(7) Minneapolis-Honeywell Regulator Co., Brown Instruments Division, Wayne & Windrim Ave., Philadelphia 44, Pa.

An electronically operated circular chart controller has been designed to control industrial processes according to time-temperature schedules. In instances where both time and temperature control are important for product quality and efficiency of operation, the new instrument has an integral-program cam mechanism that automatically positions the instrument control point in accordance with a predetermined program. It combines within a single case, measurement and recording on a 12-in. chart; automatic positioning of the set point index as directed by a transparent program cam; automatic program control of the variable.

Infrared Oven Panels

(8) Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.

These electric infrared oven panels come in two modular sizes with built-in bus bars, insulation and frame; are ready to be erected in oven structures and connected to plant wiring.

According to the manufacturer, energy radiated by this far-infrared generator is absorbed with practically equal speed by all colors from black to white, with negligible reflection.

Two sizes are available: 1x4 ft, with a 10.8 kw capacity, and 2x4 ft with 21.6 kw capacity. Output is in excess of 9,200 Btu per square foot per hour. These two modular sizes can be assembled into ovens of almost any length, width or height, it is stated.

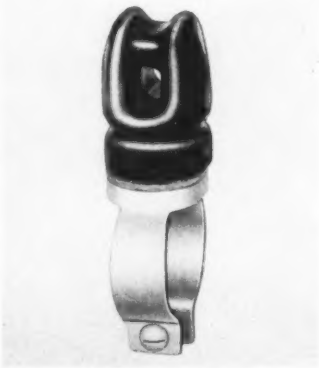
For manufacturers' bulletins with additional information on these products, fill in coupon on page 56.

Timer

(9) General Control Co., Boston 34, Mass.

Timed operations between 60 milliseconds and 60 seconds may be controlled by the new Promatic electronic timer. Discharge of resistor-capacitor network through a sensitive gas tetrode relay tube provides the basis for each timing period, the duration of which may be set manually by a potentiometer. Steps within the over-all timing range are covered by plug-in condensers.

The time period is set manually by means of the indicator and the 3⅜-in. dial. Timing commences upon closure of any external switch; control contacts either open or close at end of timing, depending on actual circuit requirements. Control contacts are double pole, double throw, rated at 10 amp, 125 v a-c, noninductive. Operation is from 115 v a-c or 220 v a-c, 60 cycles.

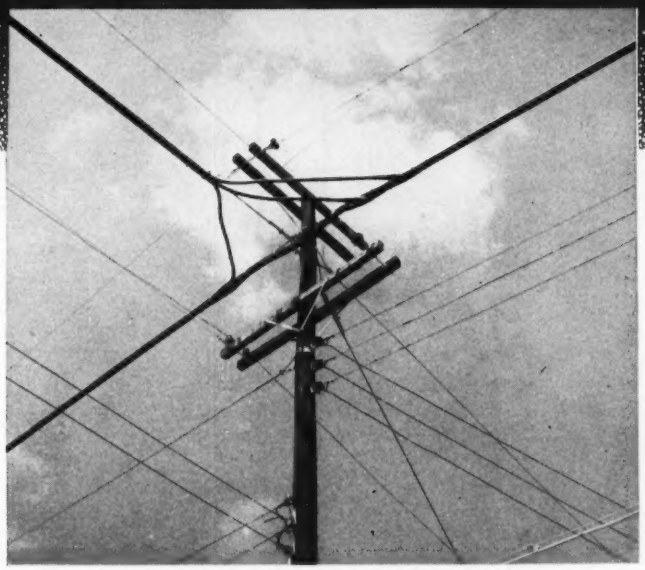


Pipe-Mounting Wireholders

(10) Porcelain Products Co., Findlay, Ohio

This new line of pipe-mounting service wireholders and house brackets was designed primarily for service entrance conductors on low ranch-type houses that call for a pipe mast to secure proper ground clearance; can be adapted for other uses. The illustration shows the single-point unit with all-porcelain wireholder. Two-point brackets are available in 9 in. and 12 in. spacing, and 3-point brackets come in 4½ and 6 in. spacing. The entire series is also available with metal reinforced wireholders. Single-point units can be used on 1¼-, 1½-, 2- and 2½-in. pipe. The 2- and 3-point units can be used on 2- and 2½-in. pipe.

DO YOUR OVERHEAD LINES LOOK LIKE THIS?



This photograph shows many of the reasons why you should consider installing aerial cable instead of line wire. Notice what a neat, compact job the linemen have done and how unobtrusively the cable fits into the picture. Wouldn't you like your overhead lines to look like this?

It is a safe job too because the cable is completely insulated. Even if the cable should fall, which is highly unlikely, there is little or no danger to passers-by. Experience has shown that insulated aerial cable is the safest form of above ground transmission. Wouldn't you like that?

Notice how flexible the installation is too. See what a good looking "Y" tap has been taken off and notice the streamlined appearance of the splices. There is little danger here from swinging arcs or grounds caused by wet conditions. This type of an installation will reduce your trouble calls from owners of television sets. Wouldn't you like to increase safety and cut down on customer complaints?

Insulated aerial cable leaves the pole in an uncluttered state. Wouldn't you like to leave the impression with your customers that you practice good housekeeping?

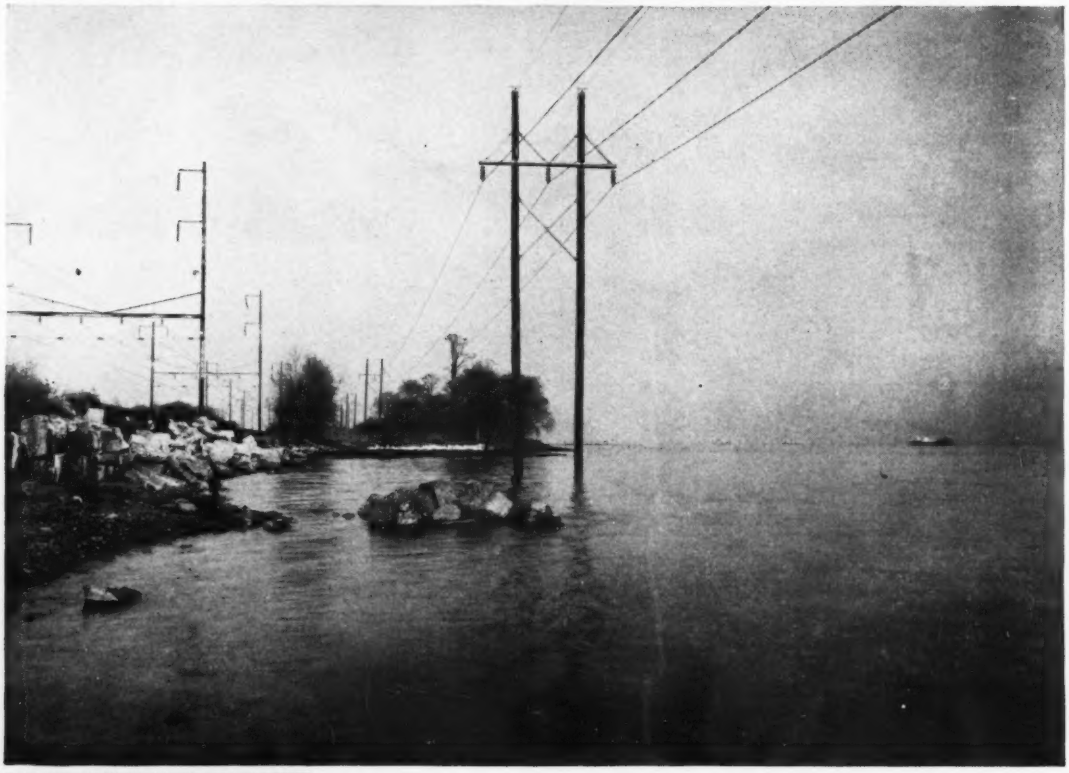
These advantages and more can be yours if you use Simplex Aerial Cables. You will find that they are exactly what you want. They are made in various styles and sizes to meet varying conditions. Want more information about these versatile distribution lines? A note to the address below will bring it to you without obligation.

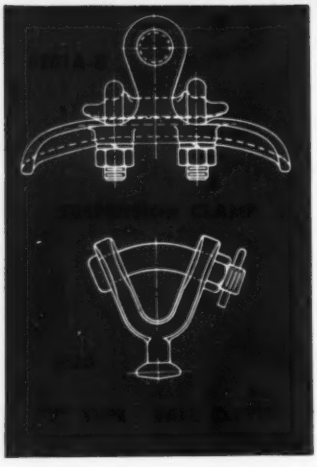
Simplex - WIRES & CABLES

SIMPLEX WIRE & CABLE CO.
79 SIDNEY STREET,
CAMBRIDGE 39, MASS.

This line is . . .

WAIST-DEEP





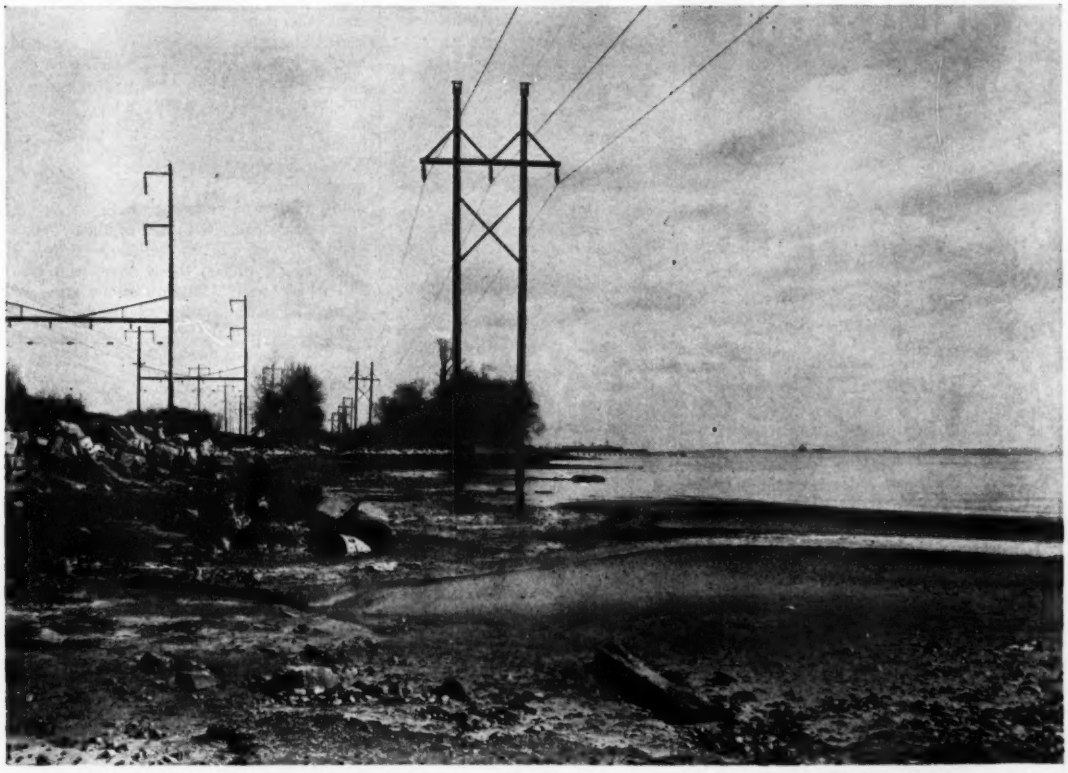
HIGH TIDE finds these poles — part of Delaware Power and Light Company's 67 kv. transmission line — isolated by water.

Twice a day . . . at high tide . . . stretches of this Delaware Power and Light Company line are surrounded by water 5 feet deep. The reason . . . because some poles on the 67 kv. line stand below high water level along the Delaware River.

The wood pole transmission line, 7.8 miles long, has a 100,000 kva capacity. Erected in 1947, it extends from the company's Christiana Substation in Wilmington to a point near the Delaware-Pennsylvania state line. It helps bridge the gap between the firm's 67 kv. transmission system and the Philadelphia Electric Company.

Delaware Power and Light Company . . . like so many outstanding power concerns . . . chose BTC Hi-Line Hardware for this line. Performance to date, the company reports, has been good.

IN WATER



LOW TIDE and here are the same poles after the river has receded. Special equipment was used to haul and erect these structures.

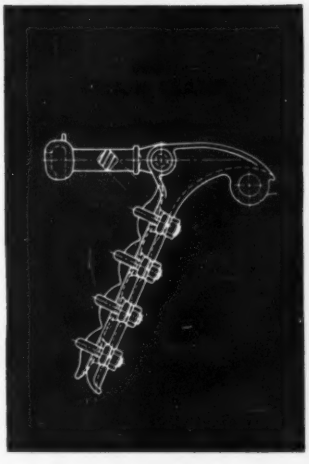
Specify BTC Drop Forged Clamps and Fittings by name for all your transmission line projects. You'll find that they're easier to install . . . give trouble-free performance . . and help hold maintenance to a minimum.

Sold through your insulator manufacturer only

Drop Forged BTC *Hi-Line Hardware*

The BREWER-TITCHENER Corporation

Cortland · New York



BRANDED!

BRANDED JACKETS!
No mistake . . . You know you are getting *Certified*. You read at a glance cable type, size, voltage, "P116BM". . . which indicates approval by the Pennsylvania Bureau of Mines, and acceptance for listing by the U.S. Bureau of Mines. Easy to measure..."Bronco" is repeated every 2 feet.

With Bronco 60 *Certified* you *know* you are getting a full 60% *by weight* of Neoprene in your cable's protecting jacket because its contents are *certified*.

***More Neoprene* makes long-lasting Bronco 60 *Certified more resistant* to oil, acids, alkalis, ozone, gasoline, salt water.**

In addition, with Bronco 60 *Certified* you get: 1. Cold Rubber Insulation. 2. Branded Jackets. 3. Superior Flexibility.

So, BE CERTAIN, GET *CERTIFIED* — the greatest cord value on the market!

WESTERN INSULATED WIRE CO.
Los Angeles 58, California

Split Bus CB Panelboard

(11) BullDog Electric Products Co., Detroit 32, Mich.

The XD Electri-Center circuit breaker panelboard is designed with main bus bars split so that they feed two separate sections or groups of Pushmatic circuit breakers. The circuit breakers in the upper section serve as main disconnects and those in the lower section as general branch lighting circuits. The service line cables are connected to the bus bars in the upper section. Two 50-amp Pushmatic circuit breakers in the upper section feed the lower bus bars, acting as a main breaker for the lighting section. The XD is listed by Underwriters' as inspected panelboard and service equipment. Panels come in two sizes, 12 or 18 circuits, each with either flush or surface fronts. The Electri-Centers are rated single phase, three wire, 120/240 v a-c with 100-amp main wire grips. The manufacturer's basic device principle is used for merchandising.

Connector

(12) Pass & Seymour Inc., Syracuse 9, N. Y.

The redesigned P&S 7084 double T-slot cord grip connector body features black Bakelite body with easy-to-find slots; extra thick steel armored section and cord grips that are zinc plated to resist corrosion; accurately positioned long-life contacts with spring at base, removed from arcing point; tapered wireways and large binding screws to simplify assembly. This device has ¼ to 9/16 in. cord hole and is rated 15 amp, 125 v, 10 amp, 250 v.

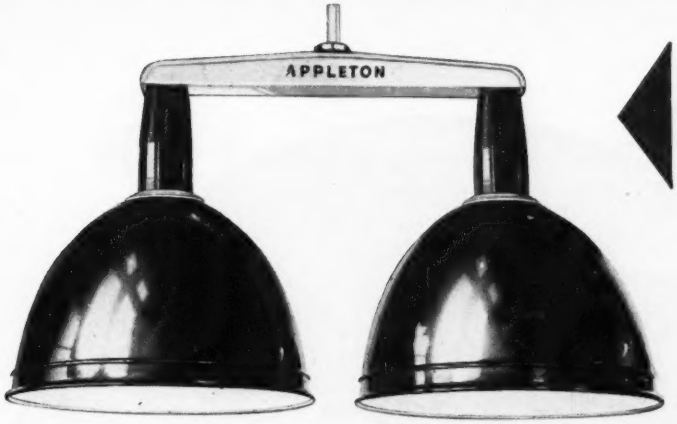
Transformers

(13) Precision Welder Mfg. Co. Inc., 660 W. Grand Ave., Chicago 10, Ill.

A new line of class B insulated air-cooled transformers for general light and power service in ranges from 3 to 50 kva has been designed to NEMA specifications; is a single-phase, 50- or 60-cycle unit with dual-voltage primary and and secondary windings in two sections, arranged for either series or multiple connection. Voltages range from 480 to 110.

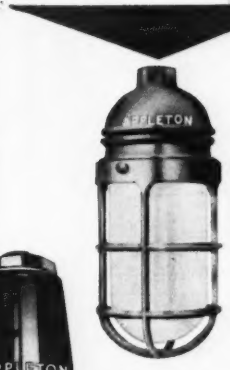
(14) PROBE—The G-S magnetic probe has a point that can be extended or retracted by turning the end knob. Strength of the magnet may be controlled by amount of extension. Product of General Scientific Equipment Co., 1412 Packard Bldg., Philadelphia, Pa.

Better Light Plus Everlasting Service



Twin Highlite—For high levels of illumination from a minimum number of outlets in high bay industrial interiors. Available with porcelain enamel or Alzac aluminum finish.

V-51 Convertible Vapor-light Fixture—Exclusive Unit Assembly makes receptacle, globe, guard instantly detachable for relamping. Converts to higher or lower wattages just as easily.



APPLETON
INDUSTRIAL LIGHTING

Efficiency, durability, simplified installation and maintenance . . . these are the *musts* of good industrial lighting. You will find them all in Appleton Lighting Fixtures.

To meet exactly the varying needs of indoor and outdoor illumination, each Appleton fixture is specifically designed for a specific lighting function. For any lighting requirement—including highest quality equipment for hazardous locations—specify Appleton, The Standard For Better Lighting.

RLM Standard Dome Reflector—Made of Rust-resisting iron with three coats of baked porcelain enamel. Sectionalized construction permits easy installation, convenient servicing.

Pat. No. 2,393,202

Type EFU—First and still finest Explosion-Proof Lighting Fixture. Available for two 40 Watt, 48″ lamps or two 100 Watt, 60″ lamps.

Sold Through Electrical Wholesalers

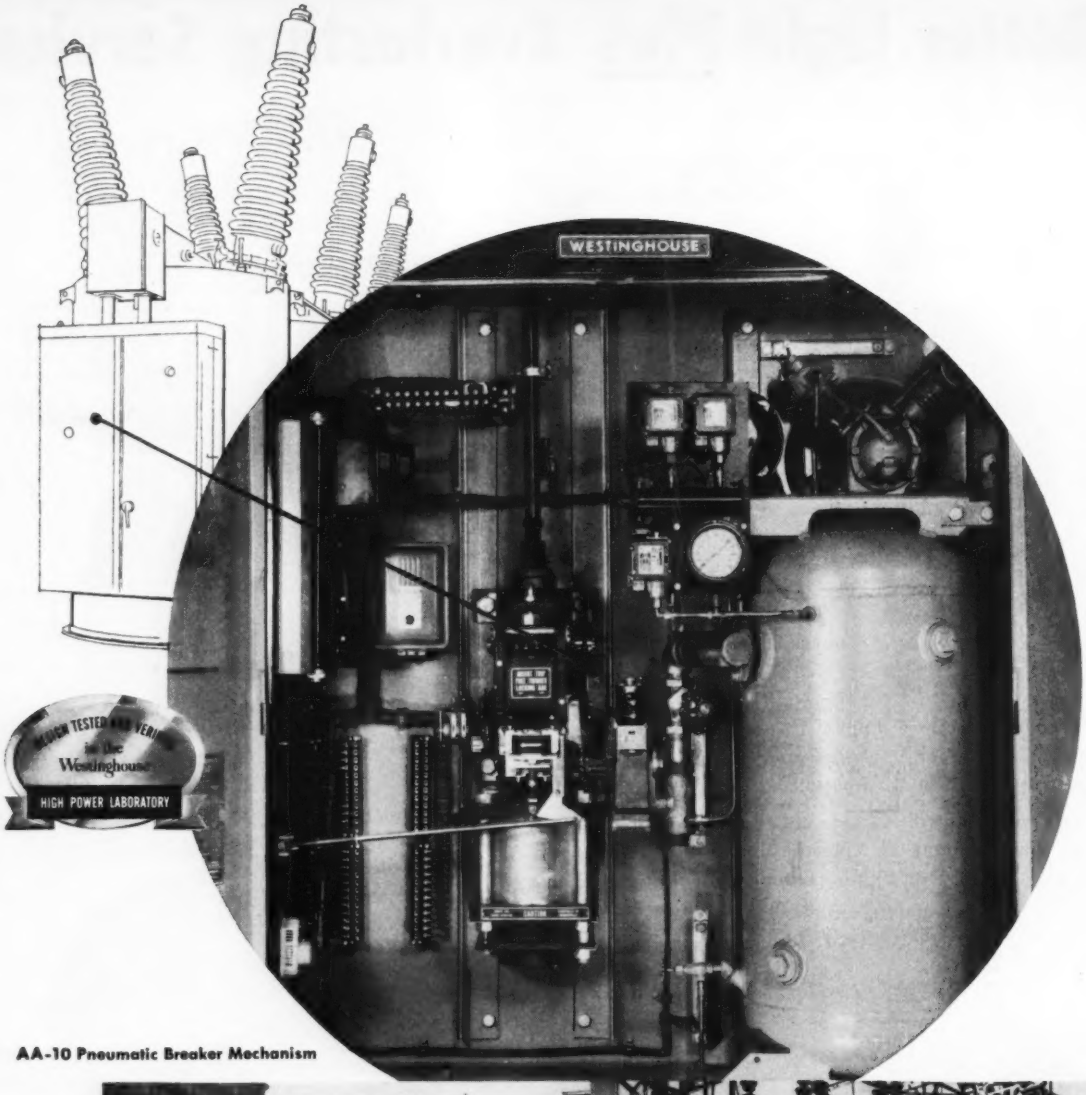
APPLETON ELECTRIC COMPANY

1709 Wellington Avenue • Chicago 13, Illinois

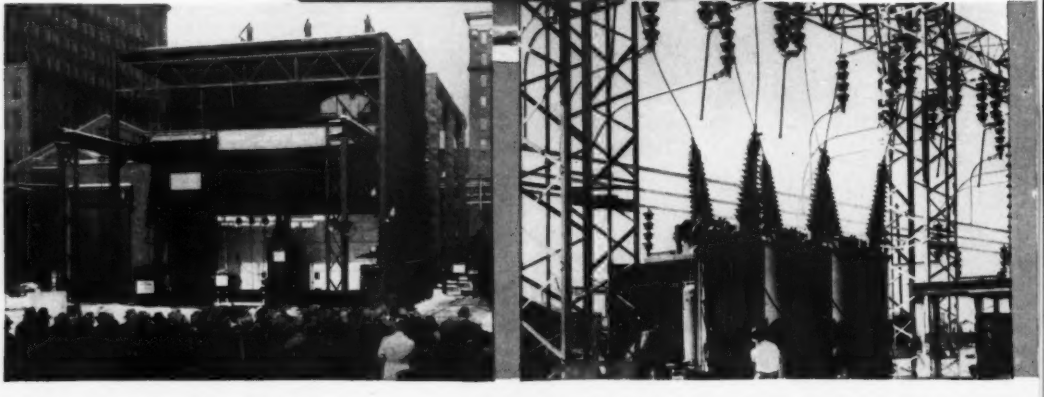
Sales Engineers: NEW YORK, 50 Church St. • DETROIT, 3049 E. Grand Blvd. • CLEVELAND, 1836 Euclid Ave. • SAN FRANCISCO, 655 Minna St. • ST. LOUIS, 227 Frisco Bldg. • LOS ANGELES, 100 N. Santa Fe Ave. • ATLANTA, 724 Boulevard, N. E. • BIRMINGHAM, 809 Brown-Marx Bldg. MINNEAPOLIS, 305 Fifth Street, S. • PITTSBURGH, 412 Bessemer Bldg. • BALTIMORE, 100 E. Pleasant St. • BOSTON, 10 High St. • DENVER, 1921 Blake Street • PHILADELPHIA, 231 South 20th CINCINNATI, 608 American Bldg. • HOUSTON, 717 M. & M. Bldg. • HAVANA, Cuba, Malecon No. 9 BINGHAMTON • DALLAS • INDIANAPOLIS • KANSAS CITY • ORLANDO • MILWAUKEE NEW ORLEANS • SEATTLE • PORTLAND, ORE.

Export Representatives: International Standard Electric Corp., 67 Broad St., New York 4, N. Y.

APPLETON ELECTRIC PRODUCTS



AA-10 Pneumatic Breaker Mechanism



These breaker mechanisms, like every advance in Westinghouse apparatus design, have been proved in exhaustive tests in the Westinghouse High Power Laboratory.

This 10,000,000-kva, 161-kv, 3-cycle breaker is equipped with an AA-10 pneumatic mechanism, and arranged for 20-30-30 cycle multiple reclosing.

New Breaker Operating Mechanisms Combine High Speed Reclosing...and Mechanically Trip-Free Opening

Two pneumatic operating mechanisms—the AA-7 and AA-10—now handle the complete range of Westinghouse Oil Circuit Breakers, from 15 kv, 500,000 kva to 230 kv, 15,000,000 kva. They provide new standards of operation.

THE AA-10 MECHANISM IS . . .

Larger . . . more powerful to meet the closing requirements of today's highest rated breakers.

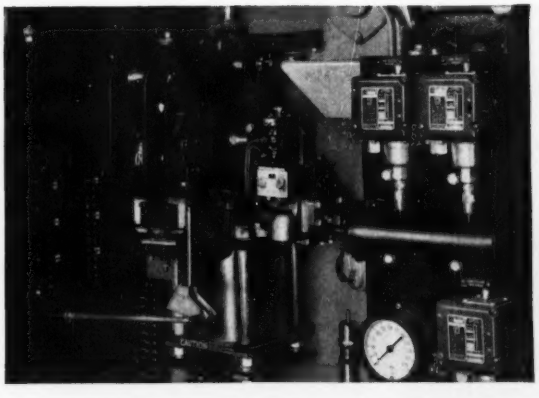
Selective . . . It trips mechanically trip-free whenever there is high-pressure air in the closing cylinder . . . contacts open unrestrained . . . never a drag from the closing piston. For high-speed reclosing, the mechanism trips non-trip-free . . . opens only part way and quickly recloses, greatly reducing stress on both the mechanism and breaker.

Unlimited Reclosing Possibilities . . . High-speed reclosing in 20 cycles, or . . . ultra-high-speed reclosing in 15 cycles or less, or . . . multiple high-speed reclosures.

THE AA-7 MECHANISM . . . Mechanically trip-free for all operations . . . meets the closing requirements of moderately loaded breakers and provides 20-cycle reclosing even after mechanically trip-free opening.

Proved Operation

Exhaustive tests in the Westinghouse High Power Laboratory and field experience on the largest breakers in service today are your assurance of perfect mechanism performance. For complete details, ask for Bulletin DB 33-125. Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.



The AA-7 mechanism, like the AA-10, features roller-bearing latches, no adjustments, simplified air control, unrestricted access to all components.

See "Electrical Proving Ground"

The dramatic story of the Westinghouse High Power Laboratory in sound and color motion picture. For details see your Westinghouse representative, or write Westinghouse Film Division, P. O. Box 868, Pittsburgh 30, Pa. J-60782

ELECTRICAL PROVING GROUND

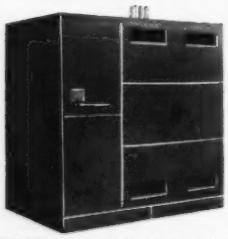
YOU CAN BE SURE.. IF IT'S

Westinghouse

POWER CIRCUIT BREAKERS

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

100 KVA Type F Transformer
2400/120/240



450 KVA, Type F Unit Substation,
4160 V. Delta, 60 Cycles, 3 Ø—
120/208Y, 4 wire.

Made by a pioneer in the dry type, air-cooled transformer field. Eliminate need for liquid filled units. No hazardous, inflammable oil or toxic liquid to fuss with. Maintenance of oil level, foreign matter, sludge accumulation, and subsequent filtering are relegated to the "horse and buggy days".

**MARCUS DRY TYPE,
AIR-COOLED TRANSFORMERS**

ARE SAFE — No explosion or fire hazards. No fire proof vaults. Class B and C heat proof insulations.

ARE ECONOMICAL — Lower cost installation and operation, negligible maintenance.

For the transformer that's second to none, specify MARCUS.

ONE OF THE WORLD'S LARGEST MANUFACTURERS OF DRY TYPE TRANSFORMERS EXCLUSIVELY

1 to 2,000 KVA up to 15,000 Volts to meet Individual Requirements

- DISTRIBUTION
- GENERAL PURPOSE
- UNIT SUBSTATION
- PHASE CHANGING
- ELECTRIC FURNACE
- RECTIFIER
- WELDING
- MOTOR STARTING
- SPECIAL

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MARCUS
TRANSFORMER CO.
INC.
40 MONTGOMERY STREET
HILLSIDE 5, NEW JERSEY
PIONEERS IN THE FIELD OF AIR-COOLED TRANSFORMERS

Controller

(15) Wheelco Instrument Co., 847 W. Harrison St., Chicago 7, Ill.

A direct-reading indicating pyrometer controller, model 293 Capacitrol, incorporates a built-in unit to give straight-line control; gives proportioning control for processing equipment such as ovens, furnaces, kilns. This instrument operates with the manufacturer's Electronic Link but has in addition the new Line-otrol that automatically reduces to a minimum the on and off variation of the control instrument above and below the preset control point. The unit is 7⅝ in. wide, 8⅛ in. high, 7$^{25}/_{32}$ in. deep and is for flush or surface mounting on original heating equipment or instrument panels. A range of standard scales in various thermocouple calibrations is available.

Insulation

(16) Bentley, Harris Mfg. Co., Conshohocken, Pa.

A new electrical insulation made of braided Fiberglas with a silicone rubber coating and known as BH 1151 is a class H insulation claimed to offer high heat resistance and great flexibility. Basic Fiberglas braid has been treated to retard fraying and coated with silicone rubber fused to the braid. It meets applicable NEMA class H specifications and will not support fungus growth. It maintains its flexibility and rated dielectric strength through a temperature range of –90 F to 400 F, with spot temperature resistance to 600 F, according to the manufacturer. It comes in all standard sizes in NEMA grades H-A-1, H-B-1, H-C-1 and H-C-2 with average rated dielectric strengths of 1,500 to 7,000 v, in natural and colors.

Resistor and Fuse

(17) Milwaukee Resistor Co., 700 W. Virginia St., Milwaukee 4, Wis.

The Fusistor operates as a resistor only under normal loads but will sustain an overload of current for a predetermined time, then melt or burn out before expiration of another predetermined time. This unit can be built to carry an overload for a minimum of 20 seconds, then fuse or burn out within the next 30 seconds. The overload time lag can be established within closely controlled minimum and maximum time limits. There is no spewing of flame or spark emission at the moment of fusion.

IMPROVED THERMAL RESISTANCE WITH

VICTOR PURIFIED PORCELAIN

TRANSMISSION PINTYPES!

VICTOR NO. 245
TRANSMISSION
PINTYPE

For complete engineering data on this insulator and other sizes and types, send today for Bulletin No. 4.

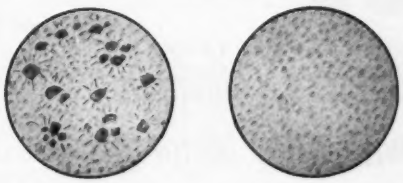
More Uniform Thermal Expansion Achieved

VICTOR *Purified* Porcelain has the most uniform thermal expansion ever achieved in the insulator field—expansion that remains uniform throughout its entire mass. This achievement, like *Purified* Porcelain's many other advantages, is due to the removal of all mineral salts from the water used in processing.

With VICTOR *Purified* Porcelain, failure of shells due to sudden thermal changes is eliminated. Choose VICTOR TRANSMISSION PINTYPES—made of *Purified* Porcelain—finest insulator porcelain ever made!

VICTOR INSULATORS, INC. VICTOR, N. Y.

Specify VICTOR TRANSMISSION PINTYPES



Cross-Section of Ordinary Porcelain

Cross-Section of *Purified* Porcelain

Here's Why *Purified* Porcelain Has Uniform Expansion

The drawing at the left shows a greatly enlarged section of ordinary porcelain and reveals what ceramic authorities agree contributes to porcelain weakness and possible failure under unusual service conditions. The various irregular shapes are glass-like impurities which are formed during firing, by mineral salts in the processing water. After firing, these impurities shrink at a different rate than does the porcelain itself, causing tiny fissures (shown by the dark radiating lines) which physically weaken the insulator and make it more vulnerable to puncture. Also, these differing rates of thermal expansion set up dangerous strains and stresses during sudden temperature changes in service that can actually weaken the insulator.

The drawing at the right shows the homogeneous quality of *Purified* Porcelain. Its absence of impurities gives uniform thermal expansion and lessens the possibility of failure under extreme conditions. Other advantages: maximum density and hardness, higher mechanical impact values, improved range of M and E strength values and higher oil puncture values!

MOTOR MAINTENANCE

COSTS MORE NOW!

So——

Cut it to a Minimum with OHIO Motor & Generator Brushes!

OHIO BRUSHES are designed and made to withstand all reasonable demands made upon them and to insure proper commutation at all times. This means that OHIO brushes save you time, labor and money in the efficient operation of the motors in your plant. Outline your needs and contact us for the proper recommendations.

ORDER YOUR CARBON BRUSHES FROM A SINGLE SOURCE

West Coast Representative
C. F. BOWERS
544 S. San Pedro St.
Los Angeles 13, Cal.

THE OHIO CARBON COMPANY
12508 BEREA ROAD • CLEVELAND 11, OHIO

F Mercury Lamp

(18) Westinghouse Electric Corp., Lamp Division, Bloomfield, N. J.

For larger manufacturing spaces and higher mountings and lighting levels, indoors and outdoors, a new 1,000 w, C-H12 similar to the 400-w J-H1 fluorescent mercury lamp has been added to the manufacturer's line. This new light gives a golden white light suitable for all service except where close color discrimination is involved. Its ballast is the same as that for the 1,000-w, A-H12 lamp and its BT-56 bulb has a specially developed isothermal shape that allows the phosphor coating to function at maximum efficiency.

When activated by invisible ultraviolet light from the quartz arc, the phosphor gives off red light. This blends with the blue-green-white light from the mercury arc to give a golden white light with approximately the same color quality as a mixture of equal wattages of mercury and incandescent light. Inside frosting gives better light diffusion and greater uniformity. When used outside, fixtures should be designed to protect the bulb from driving rain or moisture-laden insects.

T Light

(19) Guardian Light Co., 301 Lake St., Oak Park, Ill.

A new line of weatherproof continuous horizontal fluorescent T lights consists of two basic 30-in.-wide fixtures, one 4 ft, one 8 ft long. The units are designed to be installed separately or with a coupling device, using various combinations to form continuous rows in lengths of 12, 16, 20, 24 ft or to meet the requirements of any size island. They can be fitted to existing poles or come with 9- or 12-ft tapered octagon standards. Listed by Underwriters' for outdoor use.

(20) **LEVEL**—An all-plastic level, called Level-It, is claimed to be shatterproof and to have a frame that is electrically nonconductive. The glass bubble vial is embedded in a sheath of clear Lucite plastic, with a curved surface that magnifies the bubble. The Line and Surface pocket model has two swiveling nickel-silver hooks embedded in the plastic for use on lines. The Torpedo model has a plumb level in addition to the surface level. Made by Creative Plastics Corp., Stony Brook, N. Y.

(21) **PLUG** — Cor-Lock, a new heavy-duty locking plug has been introduced by Cornish Wire Co. Inc., 50 Church St., New York 7, N. Y. Molded rubber construction is claimed to make it waterproof and shock resistant. Approved by Underwriters' for 20 amp at 250 v and 10 amp at 575 v.

Circline Fixture

(22) Sylvania Electric Products Inc., Lighting Division, Ipswich, Mass.

This 2-lamp Circline fluorescent lighting fixture was designed for residential applications in kitchens, bedrooms, bathrooms, etc., and commercial applications such as waiting rooms and small offices. Catalogued R-254, it has one 8-in. 22-w preheat-type standard-start lamp mounted inside a 12-in. 32-w instant-start lamp. The two lamps are arranged to form concentric circles of light. The chassis and reflector are of hard-baked enamel. A curved glass centerpiece is fastened to the fixture by a knurled thumb nut.

100-W Bulb

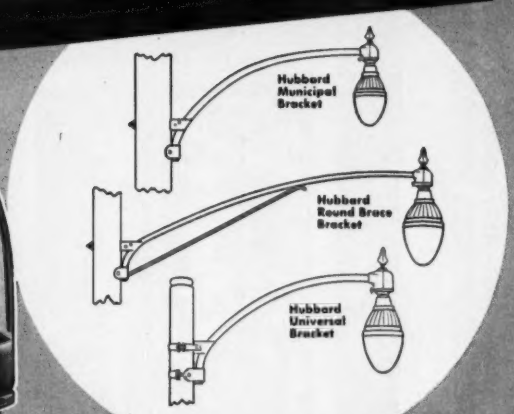
(23) General Electric Lamp Division, Nela Park, Cleveland 12, Ohio.

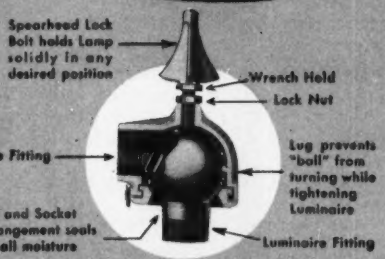
A new 100-w lamp is a larger companion of the 50-GA bulb, lamp with the built-in shade. It is for 1- or 2-socket ceiling fixtures; has a bowl shaped to direct two-thirds of the light to the ceiling for an indirect lighting effect. The lower portion of the bowl is covered with a soft-toned, permanent enamel finish designed to filter and mellow the one-third of the light directed downward. Three concentric rings in the enamel and a clear spot on the bottom are design features. Designated 100-GA, the new bulb is approximately 3¾ in. in diameter at the widest point and has a maximum over-all length of 6 3/16 in.

(24) **CASE**—A mechanic's case for repairmen, radio mechanics, electricians, TV installers, etc., is offered by Allied Brief Case Co., 186 Fifth Ave., New York, N. Y. Features are space in top section for complete set of tools and special metal trays that slip out of the bottom and have compartments for carrying parts. Made of cowhide in two styles.

(25) **POLISH** — A polish and wax to protect enamel surfaces of refrigerators, ranges and other appliances and lacquer surfaces of TV sets has been introduced by Admiral Corp., 3800 W. Cortland St., Chicago, Ill.

THE *Adjustable* HUBBARD LEVELITE* SOLVES STREET LIGHTING PROBLEMS




Spearhead Lock Bolt holds Lamp solidly in any desired position
Wrench Hold
Lock Nut
Pipe Fitting
Lug prevents "ball" from turning while tightening Luminaire
Ball and Socket Arrangement seals out all moisture
Luminaire Fitting

A maximum swing of 34° is possible in any one direction, 17° in any direction from the vertical, or center line of the Levelite.

Furnished with 2-inch pipe thread to fit 1¼-inch or 2-inch pipe threaded Luminaire; and with 1¼-inch pipe thread to fit 1¼-inch pipe threaded Luminaire.

*NOW AVAILABLE IN HAPCO ALUMINUM ALLOY AS WELL AS IN GALVANIZED MALLEABLE IRON

The Hubbard LEVELITE allows a wide flexibility in adjusting the luminaire for street lighting installations. Luminaires may easily be plumbed and leveled, even though the pole is as much as 17° from vertical in any direction. Or, they may be purposely tilted to avoid obstructions in the desired path of illumination.

The LEVELITE uses a ball and socket movement, which effectively seals itself against moisture. Permanent setting is maintained by a single "spearhead" bolt and lock nut. Changes in the angle may be made easily and quickly, before or after installation.

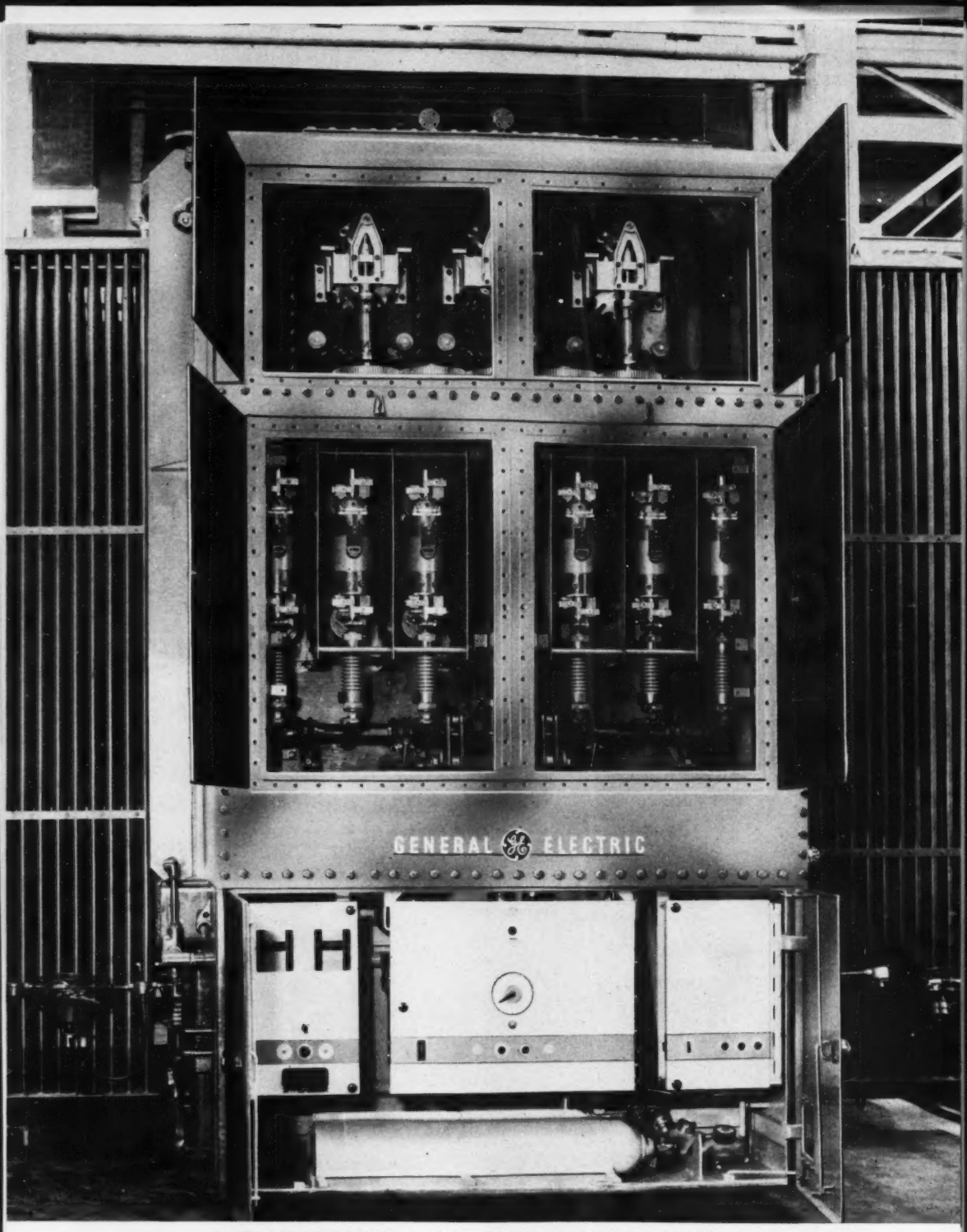
Hubbard LEVELITES make an ideal combination with Hubbard Upsweep Street Lighting Brackets, made of Hapco Aluminum Alloy, or steel. Write for bulletins describing them if you don't have copies in your files.

HUBBARD AND COMPANY

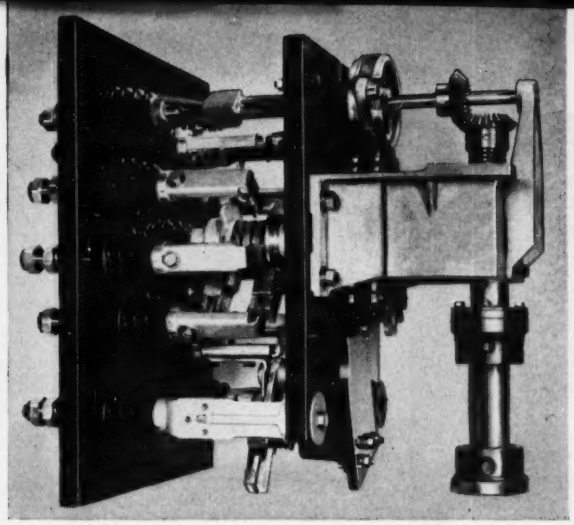
ESTABLISHED 1843

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

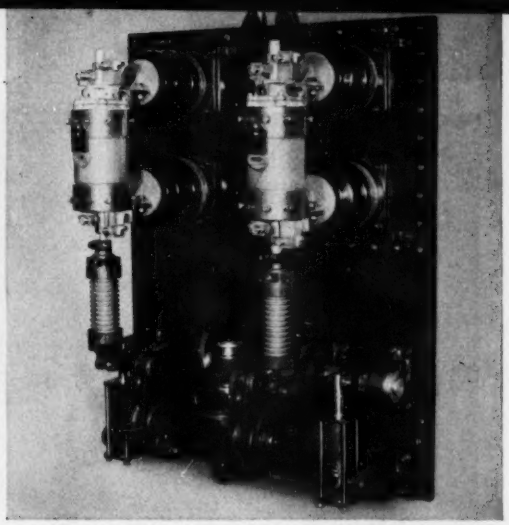
"Hang the load on Hubbard Hardware!"



RUBBER-GASKETED DOORS of this heavy-duty equipment swing open on hinges to reveal the complete accessibility of G-E Load-Ratio-Control. Tap selectors and oil-blast contactors are located in upper and center oil-filled compartments. Air-filled compartment below houses the control center, including motor drive with automatic control, fan control and automatic gas-seal equipment.



TAP SELECTORS are mounted on Herkolite* panels. Transformer tap leads are connected to the backs of the bushing studs eliminating cabling from the compartment. The movable tap selector fingers consist of two parallel bars held in contact with stationary tap shelves by a strong compression spring.



HEAVY-DUTY CONTACTORS utilize oil-blast principle of arc interruption. Accelerator springs assure rapid separation of contacts inside the Herkolite cylinders. The arc is extinguished by pressure which builds up and expels oil and gases through small port. Insulating shafts are corrugated to lengthen creepage paths, increase insulation life.

Inside Story: G-E LOAD-RATIO-CONTROL

Over 39,000,000 installed kva have proved it's as reliable as the transformer itself

This "transformer reliability" results from the complete co-ordination of the four basic factors of load-ratio-control design:

MECHANICAL LIFE. Each new LRC design must pass mechanical-life tests of some 2,000,000 operations—the equivalent of 30 to 40 years of normal service—before we approve it for production.

ARCING-TIP LIFE. Superior arc-resistant qualities are achieved with a tungsten-base alloy. We also test the contacts of each design so that you will know, accurately, when the arcing tips on your equipment will need to be replaced.

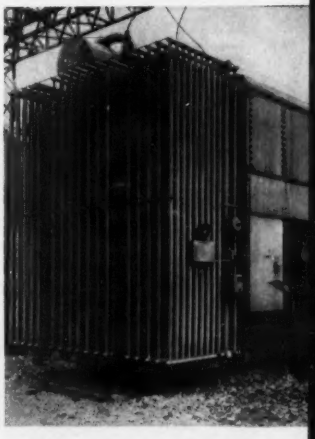
INSULATION LIFE. By using vertical insulating surfaces and electrostatic shielding to minimize the effects of oil carbonization, we co-ordinate insulation life and arcing-tip life. This means you have to clean insulation only when you replace the arcing tips.

NORMAL AND SHORT-CIRCUIT DUTY. Each contactor design has been thoroughly tested to define its safe limits of duty under these conditions. Mechanisms are applied to handle the maximum rupturing duty which would be imposed should a short-circuit occur while a tap change is in process.

The co-ordination of these basic design factors in G-E load-ratio-control assures you long service, longer periods between inspections, and less maintenance.

MODERN LOAD RATIO CONTROL . . . a factual slide presentation . . . contains more detailed information on load-ratio-control. A G-E Transformer Specialist would be happy to show it at your request. Contact your nearest G-E sales office, or write General Electric Company, Schenectady 5, New York. 401-30

* Reg. trade-mark of General Electric Company.



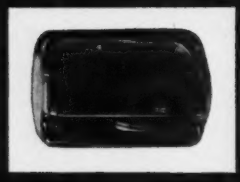
14 YEARS OF TAP CHANGES without any servicing—that's the prediction for this Indianapolis Power and Light unit—made possible by the co-ordination of insulation and arcing-tip life in G-E Load-Ratio-Control.

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Specify ILLINOIS
for ALL your Porcelain Insulator Needs

Wireholder Insulators
Guy Strain Insulators
Knobs, Tubes, Cleats
Pin Type Insulators



Write for NEW Free Insulator Catalog

ILLINOIS ELECTRIC PORCELAIN CO.
MACOMB, ILLINOIS

ECONOMICAL
Jeffries Transformers

Reasonable in Price
Reliable in Performance

Jeffries large transformers are priced reasonably—and you can save their first cost in a short time by minimizing current losses. When you use a Jeffries transformer, you can provide voltage change at the point desired, without prohibitive expense.

We supply all types and sizes. If not in stock, we build to order in a hurry—a week to 10 days.

Write today for catalog.

JEFFRIES TRANSFORMER COMPANY
1710 E. 57th St. Los Angeles 11, Calif.

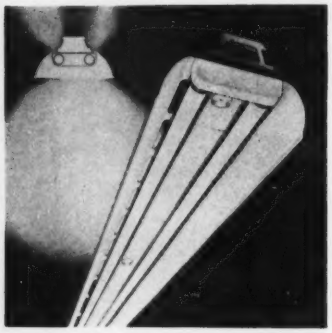
STRENGTH, ENDURANCE that Meet the Test!

Crapo
Guy and Messenger Strand

IN THE FIELD as in laboratory tests . . . Crapo Galvanized Steel Strand proves itself capable of withstanding severe punishment. Steel's inherent strength and durability are combined with definite economies in every size and grade of Crapo Steel Strand. You'll find the heavy, ductile, tightly-bonded zinc coatings, applied by the famous Crapo Galvanizing Process, provide lasting protection against corrosion.

Contact your jobber of Crapo Galvanized Products or write direct for further information!

INDIANA
STEEL & WIRE COMPANY
MUNCIE, INDIANA



Light for Industry

(26) Day-Brite Lighting Inc., 5411 Bulwer Ave., St Louis 7, Mo.

The CFI Day-Line for industrial installations has 10% upward light distribution. A constant gentle flow of air passes through the aperatures, around the lamps and over the inside and outside of the reflector. Reflectors are all-white porcelain enamel. The trusslike channel is die-formed from 20-gage steel. Vibrationproof turret sockets are standard on all models. Reflectors are fastened to channel by 2-in. captive wing nuts. Models are available for two and three 75-w slimline; two and three 40-w fluorescent; two 85-w fluorescent. The 75-w models have open-end reflectors; the others open- or closed-end reflectors.

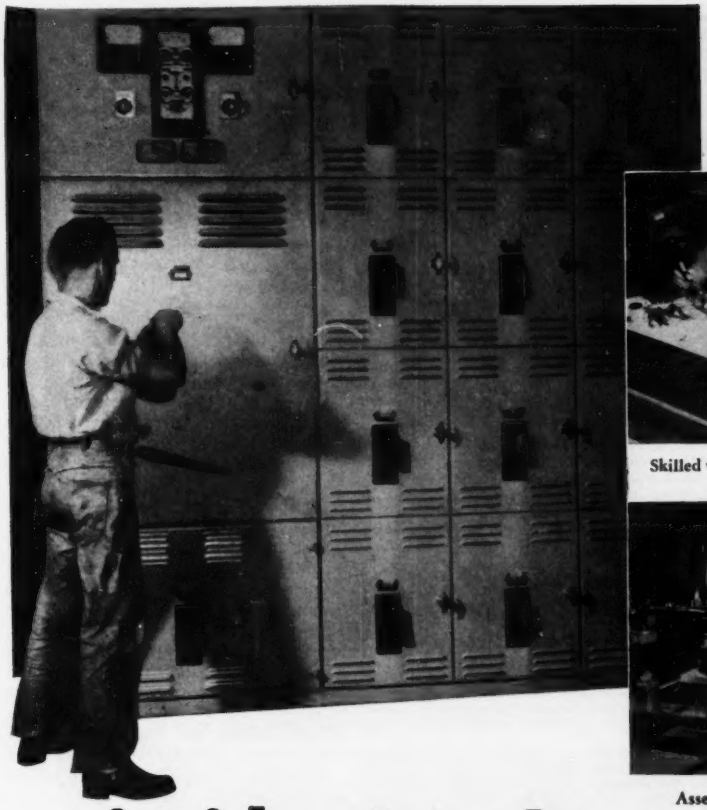
New F Lamp

(27) General Electric Lamp Division, Nela Park, Cleveland 12, Ohio.

A new type fluorescent lamp is claimed to start quickly and smoothly without external starters. Called Rapid Start, the new lamps are used with specially designed ballasts and are intended for new lighting systems only. They come in 40-w size and in standard cool white. Other colors will be introduced later, it is stated.

The new lamps differ from the conventional preheat fluorescent lamps in two principal respects. They employ a complex, triple-coiled cathode and have a water-repellent coating to insure reliable starting under high humidity conditions. The over-all lighting cost is said to be comparable with that of the 40-w preheat-start system.

For More Data
Fill in Coupon on Page 56



Final assembly of custom-built, low voltage, metal-clad switchgear.

Skilled workers assemble precision instruments.

Assembling Duo-Roll air break switches.

Workman wiring large air circuit breaker.

inside story!

Last April we opened an additional plant in Bethlehem, Pennsylvania. It is not only our newest but our largest. Because of this, we've been able to greatly increase our production of the precision-designed, dependable electrical equipment for which Roller-Smith and Elpeco have been noted since the early 1900's. We are happy to be in a position to supply increased amounts of equipment at a time when it is so badly needed and do it in a relatively short time. Despite universal material shortages and our greatly increased production you can be sure, that we . . . on the "inside" . . . are maintaining our same high standard of quality. If you need superior electrical equipment, either for yourself or as part of a defense order, contact us at once. We can't promise everything you might need, but perhaps we can help solve some of your particular problems in a surprisingly short time.

ROLLER SMITH

ELPECO

ROLLER-SMITH CORPORATION
BETHLEHEM, PA.

ROLLER-SMITH

ELPECO

WIRE SX PRODUCTS

MAGNET WIRE WITH THE WORKABILITY FOR FAST, LOW COST WINDING

Here's wire of proved workability when subjected to the punishment of modern high speed winding—whether random or layer. It helps insure freedom from broken wires, crossed turns, runbacks, spaced turns and frequent tension adjustments.

Essex Extra Test has the good slip necessary in coil winding. Slides evenly and smoothly in place, resulting in maximum turns in minimum space and in coils that will pack tight. When used for motor armatures, no matter how narrow the slots, Essex extra abrasion resistance reduces rejections.

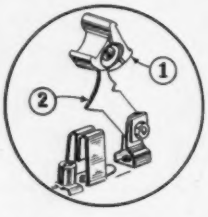
When you specify Essex Extra-Test Magnet Wire for any winding job you can be sure.

ESSEX WIRE CORPORATION
FORT WAYNE 6, INDIANA

WAREHOUSES AND SALES OFFICES: *Atlanta, Ga., *Boston, Mass., *Chicago, Ill., Cleveland, Ohio, Dallas, Texas, Dayton, Ohio, Detroit, Mich., Indianapolis, Ind., *Kansas City, Mo., *Los Angeles, Calif., Milwaukee, Wis., *Newark, N.J., Pittsburgh, Pa., *Portland, Ore., Upper Darby, Philadelphia, Pa., *Saint Louis, Mo., *San Diego, Calif., *San Francisco, Calif.

NEW SAFETY GRIP HANDLE IN STATES TYPE "SJK" TEST SWITCHES

Provides easier, safer gripping. New handle mounted on States' exclusive angle blade gives sufficient jaw contact.



States testing equipment meets P.U.E.S.R. and National Meter Committee specifications.

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Call or write us for full information on States Test Switches

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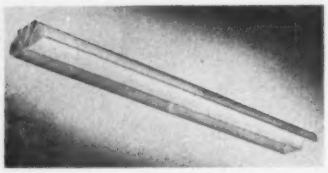
Geo. E. Honn Co.
Phone SUtter 1-7352
420 Market St., San Francisco 11, Calif.

Cat. No. 50-1/0 Illustrated

Sherman® S-0 Type Solderless Lugs

Completely redesigned—lighter and stronger—solid copper body and tongue for highest conductivity, heavy hex-head screw, extra thick thread plate. Available in 5 sizes for wire sizes from No. 14 to 500 MCM Write for Bulletin.

H.B. Sherman MANUFACTURING CO.
BATTLE CREEK, MICH.
ELECTRICAL FITTINGS FOR WIRE and CABLE



Industrial Fixture

(28) Columbia Electric & Mfg. Co., W. 1024 Ide, Spokane, Wash.

Designed to meet changing requirements, the new Industrial Four series has four interchangeable reflector and side panel combinations. Parabolic reflectors give 16% upward light, 25° cross shielding. An accessory louver is available where lengthwise shielding is desired.

The basic channel comes in exact lengths of 4, 6 or 8 ft to allow for modular planning of outlets; is an open-type housing providing a large continuous wireway with easy access to ballasts and lampholders. It may be supported by chains, rods or sliding clamp hangers.

Interchangeable reflector and side panel combinations can be attached within seconds, according to the manufacturer. They are: SBA, Alzak sides and reflector for low-brightness requirements, inspection areas, etc.; SBM, baked enamel sides and reflector for general manufacturing areas; SBP, plastic sides and enamel reflectors for service areas, employee locker rooms, cafeterias, etc.; SBO, porcelain sides and reflector. An accessory cross-baffle louver gives 25x25° shielding for office and administrative areas.

A series of square junction boxes has been designed for grid or continuous-row installations. These boxes are available with a speaker grille for P.A. systems; a red or white globe for visual paging, fire alarm locations; a blank cover for later installation of bells, horns or other devices.

Adapter

(29) McGill Mfg. Co. Inc., Valparaiso, Ind.

Vertical-pull adapter No. 84 converts the straight down pull of Levolier switches mounted vertically to the usual file-action horizontal pull of the universal-lever switch. It was designed for straight down mounting of switches and can be concealed behind louvers or fluorescent tubes. The adapter consists of a short extension arm that snaps over the switch lever and a slotted guide arm to maintain proper alignment.

Advantages like these help you Restore Service Faster!

Only FWD . . . the true 4x4 . . . offers you all these features that speed line work anywhere

Proper Weight Distribution

Only a true 4x4 gives you up to 50% of the weight on the front wheels. This gives you the extra traction needed to speed utility line work.

Full Torque P. T. O. . . . .

Utilizes full engine power through all transmission speeds. Exclusive safety lock prevents truck drive while boring.

High-Climb Oil Sump

Keeps oil pump constantly submerged. An FWD exclusive that lets you bore holes, set poles on steepest grades.

Two-Speed Aux. Transmission

Doubles the number of transmission gear ratios. Provides low gear ratio for full power at extreme low speeds in tough, cross-country operations.

Fully Compensated Drive

Three free-acting differentials compensate for differences in travel of all four wheels. Reduces drive line strains, eliminates needless tire scuffing.

Over 78 Matched Combinations of Trucks and Equipment

Now choose the exact mobilized tool that meets your requirements . . . and deal with *only* one source for complete service and supply.

DESIGNED WITH THE HELP OF VETERAN UTILITY MEN . . . FWD line construction and maintenance units handle your work . . . faster . . . safer . . . and at less cost. These mobilized tools get crews and equipment through to any location in spite of terrain or footing . . . speed work on the job . . . help maintain construction schedules or get service restored in a hurry. See your FWD dealer to get the facts on how FWDs can improve your service and earn more for each equipment dollar. The Four Wheel Drive Auto Co., Clintonville, Wisconsin. *Canadian factory*, Kitchener, Ontario.

Built by the makers of America's Foremost Heavy-Duty Trucks

The Revere ELECTRIC MFG. CO. CHICAGO, U.S.A. LINE of STREET LIGHTING EQUIPMENT Broadens Your Sales Possibilities

3 DISTINCT TYPES GET YOU IN ON ANY PROJECT

HIGHWAY • RESIDENTIAL • BUSINESS DISTRICT • BOULEVARD

WHITE-WAY PYLON-LIGHTS

Also a FULL LINE of LUMINAIRES for MERCURY-VAPOR and INCANDESCENT LAMPS

RIGID POLES WITH SINGLE or DOUBLE ARMS

HERE'S THE HOTTEST ITEM IN STREET LIGHTING—HINGED POLES THAT ELIMINATE CLIMBING

Write for LITERATURE

REVERE ELECTRIC MFG. CO.

6016 BROADWAY • CHICAGO 40, ILL.

Stocked by L. M. Baxter & Co.
San Francisco—Seattle—Portland
Los Angeles Rep.: BRACKEN SALES AGENCY
Indoor & Outdoor Lighting for Every Need

BULLETINS ETC.

(30) CONNECTORS—For contractors and industrial maintenance men, Burndy Engineering Co., Norwalk, Conn., has published catalog AL-54, containing technical information, wiring data and connector listings for use on aluminum building wire and cable sizes No. 12 through 2,000 MCM. The catalog also includes first listings of UL-approved connectors. A separate section gives installation procedures for joining connectors to aluminum conductor.

(31) SWITCHGEAR INSTRUCTION BOOK—A book of information for installation, operation, maintenance and repair of its vertical-lift metal-clad switchgear has been released by Allis-Chalmers Mfg. Co., 939 S. 70th St., Milwaukee 1, Wis. This book is listed as 18X7692.

(32) CAPACITORS—Its entire line of power-factor correction capacitors is listed in catalog 27 from John E. Fast & Co., 3141 N. Crawford Ave., Chicago 41, Ill.

(33) SWITCHES — Pacific Electric Mfg. Corp., 5815 Third St., San Francisco 24, Calif., has issued catalog sheet 210 describing its type BB-1 outdoor hook-operated disconnecting switches. These are available in 7.5, 15, 23 and 34.5 kv, 200, 400, 600, 1,200 and 2,000 amp in SPST, SPDT and tandem-transfer styles and in 46 and 69 kv, 600 and 1,200 amp in SPST style.

(34) INDUSTRIAL LIGHTING—A 96-page handbook published by Holophane Co., 342 Madison Ave., New York 17, N. Y., gives lighting information for specific industrial areas.

(35) PHOTOGRAPHIC LAMPS — A catalog of photographic lamps is offered by General Electric Lamp Division, Nela Park, Cleveland 12, Ohio.

(36) TAPES—Pressure-sensitive tapes that meet various government specifications are described in a 16-page manual from Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

(37) MOTORS—Heavy-duty single-phase and polyphase motors from 1/20 to 5 hp are covered in a recent bulletin from Triad Engineering Corp., 450 E. Ohio St., Chicago 11, Ill.

(38) CERAMIC PRODUCTS — Steatite items, such as tubing, appliance parts, bushings, are cataloged in a 52-page brochure published by Stupakoff Ceramic & Mfg. Co., Latrobe, Pa. It may be ordered as catalog 951.

(39) SWITCH — The Linemaster Lektro-Lok mechanical interlock is described in a bulletin from the Simonds Machine Co. Inc., Southbridge, Mass. The device works on the teeter-totter principle with selective circuits and prevents both circuits from being operative at the same time. The single-cord receptacle is said to eliminate harness assemblies. All wiring connections are made internally.

(40) CLIMBERS—Mine Safety Appliance Co., Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa., describes its redesigned linemen's climbers in a recent data sheet. Safety, comfort and wearing qualities have been increased, the manufacturer claims.

(41) MOTORS—Shaded-pole motors for one, two or three speeds are described and illustrated in a bulletin from Marco Industries Inc., Terrace Blvd., Depew, N.Y.

(42) STARTERS — A folder giving data on RAS and RAR multispeed and reversing magnetic motor starters has been prepared by the Arrow-Hart & Hegeman Electric Co., Industrial Control Division, 103 Hawthorn St., Hartford 6, Conn.

ELECTRICAL WEST *Not good*
68 Post St., San Francisco 4, Calif. *After September 1*

Please send me, without obligation, the new product information or catalogs described on the following pages and identified by numbers circled below:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

Advertising on page . . . . ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

NAME . . . . . TITLE . . . . .

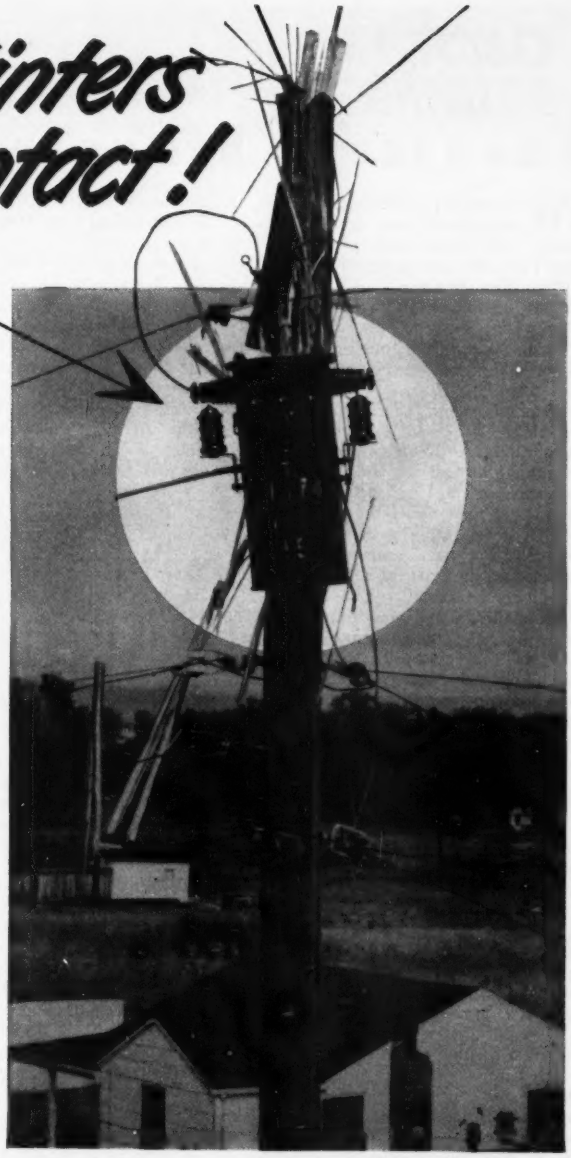
COMPANY* . . . . .

ADDRESS . . . . .

CITY . . . . . STATE . . . . .

* Please include your company's name and your position, since we cannot ask manufacturers to furnish literature unless you do.

Pole in splinters ...service intact!



On Loretto Heights Hill, near Englewood, on the Colorado Central Power Company system, this Westinghouse "CSP®" Distribution Transformer took a direct stroke of lightning early in the evening, yet maintained service with no interruption throughout the night!

The following day, when a new pole was installed, the transformer was found to be completely unharmed, although the ground lead from the tank discharge gap was burned off. The unit was therefore again hooked up for service.

Westinghouse "CSP" (Completely Self-Protecting) Transformers, because *all* parts are factory co-ordinated, provide better protection against lightning, surges, short circuits, and overloads, giving assurance of service continuity. Your Westinghouse Representative will be glad to show you actual figures which explain why Westinghouse "CSP" Transformers offer bigger savings in installation and maintenance costs. Call him today. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70616-A

"CSP" devices . . . originated and patented by Westinghouse

YOU CAN BE SURE... IF IT'S Westinghouse

"CSP" DISTRIBUTION TRANSFORMERS

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

ELECTRA'S HUSBAND

Food for Thought If Not for Freezers

"WE need a new freezer," Electra announced one evening recently, with a nice degree of emphasis that indicated she meant business.

"So does Santa Claus," I said. "What in the devil gave you that idea?"

"He was no devil, but one of the nicest salesmen I've ever talked to," she answered. "He looked at our little four-foot box and wondered how we get along with such a small freezer. He showed me that I can't take half advantage of all of the food bargains nor can I get the benefit of wholesale prices on meat and frozen foods bought in quantity. For us a sixteen-foot box would be just about the right size, he said."

"And did he tell you that if you bought the freezer from him that the purchase price would include a year's supply of food at wholesale from a store that specializes in that kind of business?" I interrupted. "And did he say that they will make regular weekly deliveries to see that your supply of frozen fruits and vegetables is adequate? And did he tell you that the whole deal would cost you a lot more than if you just bought a freezer and shopped when and where you wanted?"

"He told me some of those things, naturally," she said. "His was a carefully thought out plan which truly gives the owner of a freezer all of the benefits of an appliance of that kind."

"Jeez, you talk just like those slick salesmen themselves," I said.

"He was a good salesman, in fact one of the best to ring our doorbell in ages," she said. "When I told him you were in the electrical business too, he gave me a brief outline of his own experience. He sold appliances for the power company back in the days when it was in that business. Then for years he sold vacuum cleaners. He said that this food freezer plan was the best thing he ever had to talk about. He feels that he is really doing the housewife a service by explaining it to her."

"He should say that," I commented. "It's the sweetest deal he ever will find—high volume, long margin, big commission. If he's half as good as you seem to think, he's probably making more money than I am."

"I kept telling him that we didn't need a big freezer and that I never bought much frozen stuff," she continued. "I also said that you had definite prejudices about kinds of freezers. But he had answers to every one of my objections. In fact because I told him that I wouldn't buy the freezer without talking to you, he's going to phone in the morning and set up a date for any night this week that you say. He'll come over and tell you all about the plan."

"Like hell he will!" I exclaimed. "When he phones, you can tell him that the freezer we have is adequate and that we don't buy much frozen food anyway so his entire plan is wasted on us."

"I thought you would say that so I prepared him for what's coming," Electra concluded. "But he was such a good salesman. You don't see many like him any more."

Later that evening I was musing over our conversation and I thought to myself, "No, you don't see many salesmen like that any more." They are casualties of the times in which we have been living. In a sellers' market such salesmanship is lost on a customer who will buy anyway. We've been in a sellers' market for something more than ten years now. But times are changing. Appliances are going begging. Most cars can be driven right out of the dealer's place of business. In many lines it would appear that the buyer will soon be king. That's when the selling must start. Only there are no salesmen—or very few at the most.

How many salesmen today remember this selling gem, I mused: 2% of sales are made on the first call; 3% on the second; 3½% on the third; 10% on the fourth—and 81% on subsequent calls. Not many because few salesmen have ever made outside calls. That goes for owners of businesses as well.

An experience recounted by Dar Johnson, Portland advertising man, came to mind. A couple of weeks ago he recited this horrible example of lack of salesmanship which we agreed is fairly typical of conditions today:

For some months he had been on the mailing list of a suburban Buick dealer. The literature he received was beautiful and the sales arguments potent. In due course it had the desired effect. A particularly fine mailing piece prompted him to phone the dealer to talk about deliveries and a possible deal for his old car. Here is the gist of the conversation, if not the exact words:

"Is this the Suburban Motors Co.? I'd like to speak to the sales manager please," Dar said.

Finally when a male voice answered he continued, "Is this the sales manager?"

"Well, not exactly," the voice said. "But I happen to own the business. What can I do for you?"

"I've been receiving the very fine mailing pieces you've been sending out," Dar said.

"Where do you live?" the dealer said without waiting for more explanation.

"Route 1, Lake Grove," Dar answered.

"How in hell did you ever get on my mailing list?" the dealer asked. Then he enlarged on that topic. There was a little more conversation but at no time did the dealer ask if Johnson was a prospect, if he wanted a new car or if he could make a date for a demonstration. He did ask the name—the last name, that is.

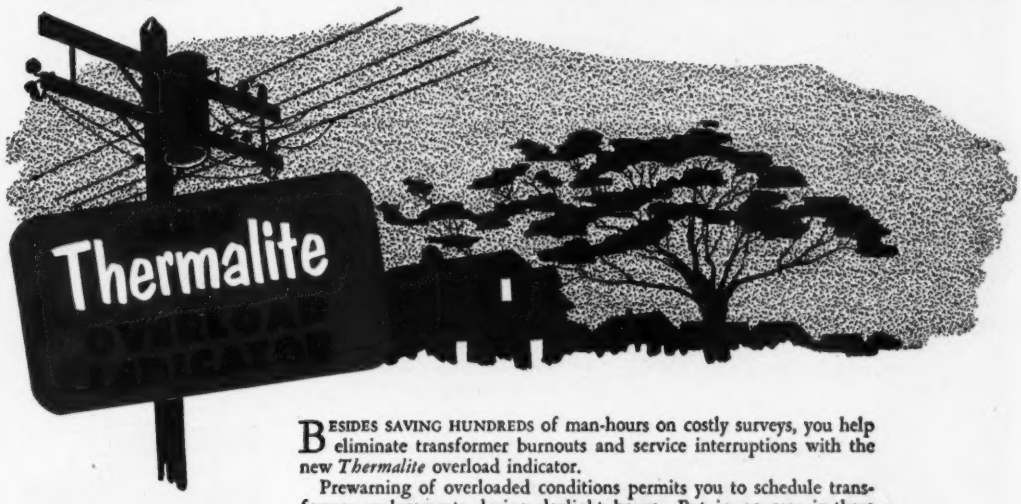
As might be expected, Dar never heard from the dealer again. A couple of weeks later he walked into one of the Portland metropolitan Buick dealer's establishments and bought a new car—the Buick he had intended purchasing ever since his interest was aroused by the mailings of the suburban dealer.

As Electra said, "You don't see many good salesmen any more."

Nor, I might add, proprietors who are salesmen either.

Here's the Low Cost Way

TO DETECT TRANSFORMER OVERLOADS



Time Saving Visual Check of Transformers with Thermalite Device Offers Permanent, Continuous and Inexpensive Load Check

BESIDES SAVING HUNDREDS of man-hours on costly surveys, you help eliminate transformer burnouts and service interruptions with the new *Thermalite* overload indicator.

Prewarning of overloaded conditions permits you to schedule transformer replacements during daylight hours. But in no case is there interruption of power service . . . because the *Thermalite* indicator operates purely as a signal device. It provides quick warning that the transformer should be replaced with a larger transformer or the load rearranged at the earliest convenient time.

Quiet in operation and simple in construction, the low cost *Thermalite* indicator is recommended for systems where more expensive devices are not feasible.

NOTE THESE IMPORTANT ADVANTAGES

1. The red warning light is actuated by a thermostatic element in the top oil. Light remains on until reset by convenient handle.

2. The device is engineered, calibrated and installed at the factory. It costs virtually nothing to maintain and it is dependable in operation.

3. It operates in all types of weather and is well protected from the elements. The brilliant light permits you to check overloading conditions visually from your service truck.

For more information contact your A-C sales office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3692

Thermalite is an Allis-Chalmers trademark.

ALLIS-CHALMERS

The Allis-Chalmers overload indicator is available on distribution transformers 100 kva and smaller, 15 kv and lower.

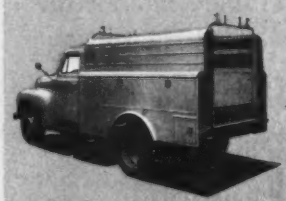
5 Ways to Speed Up Your Service Work

Series 44-90 can be installed on chassis having C.A. dimension of approximately 48"

Series 44-75 for chassis having approximately 40" C.A. dimension.

Series 44-104 for single or dual rear wheel chassis having 60" C.A. dimension.

Series 44-L-90 for chassis having approximately 48" C.A. dimension.



Series 44-L-104 for 60" C.A. chassis having single or dual rear wheels.

POWERS American AGB

SERIES 44 and 44-L

SERVICE AND MAINTENANCE BODIES

These five bodies have an impressive record for saving time and money on service jobs. Compartments are equipped to keep tools and supplies safe and orderly — easy to inventory before leaving for the job — easy to find upon arrival. The bodies are adaptable to a wide variety of service operations, and each model can be transferred to a new chassis when the original truck wears out. If you're looking for new ways to get more productive man hours, you'll want full information on Series 44 and 44-L bodies. Why not send for complete details . . . now?

Clip this coupon and attach to your letterhead!

McCABE-POWERS AUTO BODY CO., 5900 N. Broadway, St. Louis 15, Mo.
Please send me complete information on the following:

- ☐ Series 44-75
- ☐ Series 44-90
- ☐ Series 44-104
- ☐ Series 44-L-90
- ☐ Series 44-L-104
- ☐ Line Construction Bodies
- ☐ Revolving Aerial Ladders
- ☐ Hydraulic Towers
- ☐ .....

Name ..... Title .....

Company .....

Address .....

City ..... Zone ..... State .....

W Y

POWERS American AGB DIVISION

PUBLIC UTILITY BODIES & EQUIPMENT

McCABE-POWERS AUTO BODY CO.

MAIN OFFICE AND PLANT
5900 N. Broadway • St. Louis 15, Mo.

WESTERN OFFICE
Latham Sq. Bldg. • Oakland 12, Calif.

ELECTRICAL WEST
SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.

Set Our Sails for the Future*

J. M. McKibbin

Vice-president, Consumer Products Division
Westinghouse Electric Corp.
Pittsburgh, Pa.

"Cooking schools are a tried and true force—" as proved again at Sacramento Electrical Home Show in May, by Christine Dent, Westinghouse, and other home economists

As you examine our business history, you will find inherent in it are periods of preparation, as well as periods of harvest. We have just emerged from such a harvest period. Now we appear to be entering another period of preparation and, if we are to maintain our industry's record for growth, we must prepare ourselves for the marketing job ahead.

You might well ask, "Why is the electrical manufacturing industry making a major expansion at this time?" I can't speak for the other companies, but my own company's expansion program is based on the projected growth of the electrical industry in the decade ahead.

In the past 30 years, for instance, the gross national product has grown 3⅓ times. The product of electrical manufacturers has grown 11 times—more than three times as fast. Projecting these figures ahead for the next 15 years, the gross national product will have increased six times, while electrical manufacturers will outstrip it to the tune of 12½ times that of 1930.

The growth of the power industry is another reason for our company's optimism. Generating capacity in 1951 was double the 1935-39 period. By 1961 it will double again. On the consumer side, the 1951 residential kilowatt-hour sales were 4⅓ times the same base period and projections in 1961 place them at 12 times the 1935-1939 period. . . .

So much for the expansion of our industry. It's already well underway. The degree to which this increased productive capacity will be used to raise the material standards of our people depends upon how well we manufacturers and utilities alike plan saleswise for the future. Together we have the responsibility for expanding our marketing facilities at the same time that we expand our manufacturing facilities. To say it simply we must sell more as we make more.

Too often we have waited until our manufacturing facilities are ready to produce before we have developed a sales plan. It is my firm conviction that our sales planning must be developed right along with our manufacturing facilities. Long-range sales planning is much more difficult than long-range facilities planning.

Sales productivity, to a greater extent than manufacturing productivity, depends upon men and ideas rather than machines and equipment.

* From an address presented at the PCEA Convention in Coronado, June 12, 1952.

Sales techniques grow obsolete much faster than physical machinery. Sales plans and ideas start losing their potency almost from their beginning, because they are designed for today's problems. Such obsolescence is inevitable because markets, people and conditions are constantly changing.

If we are going to profitably employ our rapidly expanding manufacturing facilities, we are going to have to find better ways to serve more people through better products. Both the electrical manufacturers and utilities have a tremendous stake in this objective and, therefore, a big responsibility toward its fulfillment.

Responsibility Is Twofold

As I see it, the electrical manufacturer's responsibility is twofold: First, manufacturers are going to have to strive constantly for product improvement. We must provide continuous product development, new products, improved products and, in this area as in all aspects of selling, our investment must be in men and ideas.

Historically, the great majority of manufacturers in this country have looked upon change as an opportunity rather than a problem. The dynamics of American capitalism as contrasted to capitalism found anywhere else in the world is probably due to this one point of view more than to any other.

Since the war, too many manufacturers have been satisfied with *warmed over* product lines.

As manufacturers, we must again accept the challenge of progressive obsolescence. We must have true product developments that cause the consumers to be dissatisfied with the old products and eager to purchase the new. The philosophy of progressive obsolescence fears little from market saturation if we truly obsolete the present with the new.

This area of honest product development will require constant examination and re-examination. We must continuously ask ourselves these questions:

1. Are we making our products more useful to the consumer?
2. Are we making our products more appealing to the consumer?
3. Are we pricing our products for the widest possible market?

If we can answer these questions in the affirmative, then as electrical manufacturers we will be contributing one important solution toward strengthening our selling processes. Through product development we will be widening our consumer markets.

The second responsibility of the electrical manufacturers is to promote product features and the proper application of the product through intensive sales effort at the dealer level, and continuous product advertising. We must be sure that our advertising contains those elements that explain to the homemaker the advantages to be had from owning our product.

Upon the utilities falls the primary responsibility for promoting the overall idea of electrical living and the effective use of electrical appliances in the home.

Now what is the one way to best accomplish this job? My suggestion is through demonstration. Demonstration is the oldest form of selling but it still continues to be the best. The familiar idea of cooking schools, sewing schools and clinics on better living is a tried and true force in the utility business.

Benefits Must Be Shown

Actually utility people have a load-building opportunity by continuously showing the homemaker how to get more living pleasure from the products she has purchased. There are thousands and thousands of table appliances that are either purchased, or received as gifts, which remain practically unused in the American home because the housewife hasn't been shown the benefits that she can obtain by the daily use of these products.

Another load-building opportunity is offered by the installation of more 220-v appliances. Too many homes now have a single 220-v appliance. The installation of the first 220-v appliance should be looked upon as opening the door to the sale of additional major load-building appliances.

My plea, therefore, is that we take the time-tested device of product demonstration and apply it to assure not only the purchase of new electrical products but the continuous use of household appliances already in the home. By doing this job you will achieve a greater appreciation on the part of the housewife for the convenience that electricity brings to her and you will be getting a very real public relations dividend.

Television is an ideal medium for selling the full use of electricity in the home through product demonstration. Five years ago there were only a few thousand television sets in use. Today, there are more than 17 million, truly a modern mass medium for product demonstration. Television is a medium that affords us the opportunity to use demonstrations to sell products and to build load by keeping products in use.

Since the very start of television as a national medium, our company has used it to demonstrate products and has found real sales power in product demonstration. In fact, Betty Furness, the star of *Studio One*, has been called by many "the best salesman for the electrical industry." Our distributors and dealers attest to the value of product demonstration.

Local television affords a similar load-building opportunity far beyond anything the utility industry has ever had before. I believe it also offers one of the best public relations mediums possible. As businessmen we fail too often to recognize that the home is the center of the American housewife's life. When you enter that home with practical, labor-saving suggestions, and household hints, you will find the housewife receptive to new labor-saving ideas.

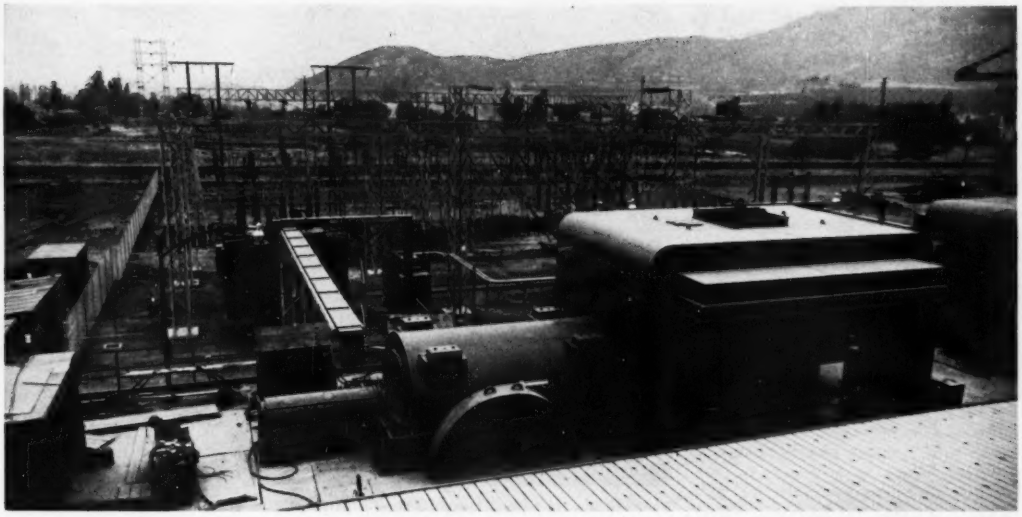
One effect of this promotion will be to increase domestic consumption of electric power. Another long-range effect will be to stimulate the replacement of old appliances for new. The best promoters of what we call progressive obsolescence are the continuous users of the product. The habitual coffee drinker, the waffle eater, the housewife who uses her sewing machine constantly, or the young mother who makes full use of her automatic washer and dryer. The continuous user of a product is always in the market for the latest in product improvement.

Let's Set Our Sails

In summing up, this is the way I should like to see our industry "set its sails." Let the manufacturer develop products that offer more convenience to the American housewife. Let him promote those products in terms of features and appliances.

Let the utility companies take up the job of continuous education so that the housewife is assured of the benefits that come from living electrically.

Let's employ the tried and true technique of the cooking school. Let's use the new magic medium of television for these demonstrations so that thousands will receive the benefits of product education rather than the relatively few that benefited from these schools prewar.

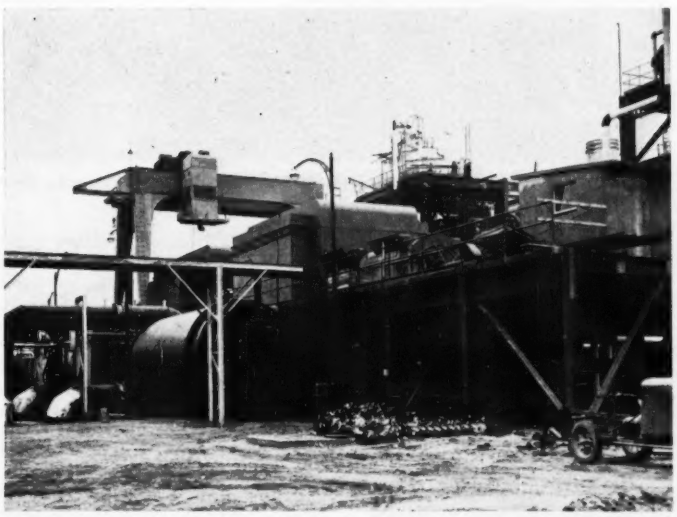


View from firing aisle roof showing No. 2 generator weatherproofed for outdoor operation and steel plate housing over the turbine

Highgrove is Completely Outdoor Plant

Outdoor construction, side entry condensers and unit system resulted in unit cost of $140 per kw

Willis T. Johnson
Vice-President and Executive Engineer
California Electric Power Co.
Riverside



Use of side entry condensers bolted to ground slab reduced foundation costs by one-third

Besides being the first completely outdoor steam plant to be built on the Pacific Coast, the Highgrove plant of the California Electric Power Co., near Riverside, incorporates noteworthy features of design contributing to low unit cost. On May 9, six days ahead of schedule, steam was applied to the first 30/33-kw preferred standard unit and the machine was released for test run on May 30, well ahead of schedule. The second similar unit is scheduled for first roll over on July 15.

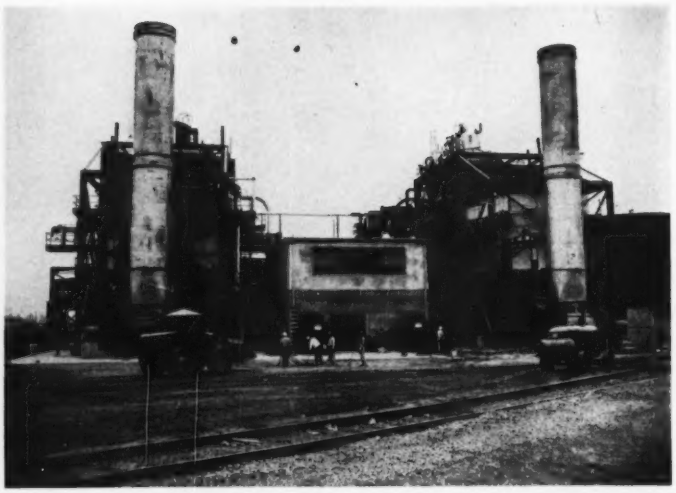
Savings made possible by outdoor construction and a unit system employing preferred standard units are expected to result in an over-all cost of approximately $140 per kw for the first two units. With the addition of two 40-mw units by 1954, the estimated cost will be reduced to $135 per kw. Design for the first two units will permit the plant to be operated by a crew of only four men.

Units 1 and 2 are 30,000-kw preferred standard, 3,600-rpm units operating at 850 psig and 900° FTT 2 in. Hg absolute back pressure. Anticipated heat rate is 12,500 Btu per net kwh. Units 3 and 4 will be 40,000-kw preferred standard units, operating at 1,250 psig and 950°.

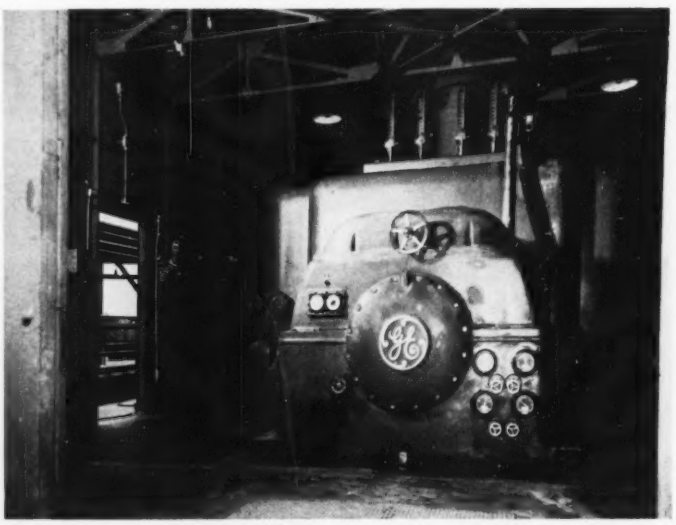
The use of side entry condensers allowed the headroom between the

turbine level and condenser level to be reduced to 14 ft from the usual 19 to 22 ft, effecting a reduction in foundation costs of about one-third. The condenser is bolted to the ground level slab, and lateral bracing required for earthquake shock is substantially less because of the lower foundation. The plant is located about 1½ miles from the San Andrias earthquake fault, and was therefore built to resist two-tenths the acceleration of gravity.

All rotating equipment, with the exception of the main turbogenerator, is located at ground level without any excavations or equipment below. The General Electric generators were weatherproofed by the factory but the turbine is protected by a locally fabricated removable box-type steel plate housing. This box-type turbine house, as shown, provides ample room for ordinary access to any part of the turbine, and removal of the top will suffice for most maintenance work. For major overhauls, the sides can be removed separately and stacked in a small space. A 45-ton gantry crane serves the two turbine-generator units. To keep down the cost the crane was designed to make four 103-ton lifts during the course of construction.



Enclosed control room is located between the two boilers with auxiliary switchgear below



Locally fabricated steel plate turbine housing permits easy access for maintenance work

Boiler Plant

The single Combustion Engineering type VU-50X boiler for each unit is rated at 320,000 lb of steam per hour. Boilers are of the water-wall type with the superheater being damper controlled. A Lungstrom air preheater is used to transfer heat to the incoming air for the boiler. Each boiler is equipped with a single forced draft Sturtivant fan driven by a 250-hp motor. On the single induced draft fan there is a 350-hp motor. Air flow from single-speed motors is controlled by louvers.

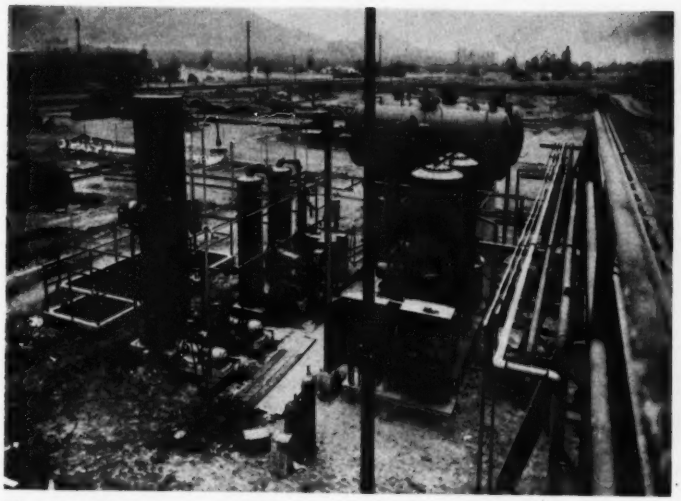
Feedwater for the boiler is heated by five feedwater heaters that use steam coming from the turbine at the 4th, 8th, 12th, 15th and 17th stages. The Pacific boiler feedwater pumps are driven by 600-hp motors, and the two pumps per boiler are each capable of supplying full load boiler requirements.

Six Peabody Engineering Co. combination gas-oil burners per boiler are used. Gas at 20 psig is burned whenever available. Oil is burned the remainder of the year. Gas is estimated to be available seven months per year. Fuel oil for the boilers is Bunker C fuel oil bought under specifications P.S. 400. Storage for the first two units consists of two 80,000-bbl steel tanks. This is about a 60-day supply of fuel oil. Facilities for unloading four tank-carloads at one time are available, and delivery of fuel oil by truck can be handled through the same dumping pits. A 4,000-bbl fuel oil day storage tank is located adjacent to the plant and heated oil is circulated to the burners at all times.

Condensing water is circulated through the one Allis-Chalmers 28,500 sq ft two-pass side entry condenser serving each turbine through a 60-in. circulating water pipe that supplies both condensers in parallel.

The condenser cooling water for units 1 and 2 comes from two Fluor Corp. 7-cell 26,500-gpm induced draft cooling towers, and make-up water for the cooling towers comes from an irrigation canal that is adjacent to the plant site. Stand-by for cooling water make-up is obtained from two wells drilled on the property. Each stand-by well is capable of pumping enough water to supply the ultimate capacity of the plant, which is four units and 140,000-kw nominal rating.

Cooling tower make-up water is treated with chlorine to control cooling tower growth and it is also filtered



View of 24,000 gal per cycle Infilco demineralizer that supplies boiler make-up water

Central control room with boiler boards on either side, electrical board in background

by a Hardinge filter. Sulfuric acid is added to the cooling tower basin to control the alkalinity and retain the calcium and magnesium in solution.

A third well with a capacity of about 350 gpm is used to supplement the canal water supply when unpredicted loads are placed on the plant, because the flow of water from the canal can be changed once only each 24 hours.

A fourth well of 100 gpm capacity supplies domestic water for the plant, and also supplies the boiler make-up water that is softened by an Infilco demineralizer of 24,000 gal per cycle capacity. Thirty-six thousand gallons of raw water are stored in a divided tank that also has a capacity of 36,000 gal for soft water. Waste water from the demineralizer is diluted with cooling tower blow-down water, and the resultant water is returned to the irrigation canal for use as irrigation water. If the canal is shut down, this waste water is turned into a stream that flows into the Santa Ana River. Waste water from the plant will not injure plant or fish life.

There are no steam-operated auxiliaries in the plant. Power for starting up is obtained from a 5,000-kva, 3-phase cold start-up transformer that is connected to the twin-circuit 92-kv incoming transmission line. This cold start-up transformer will serve to start up any one of the four units in the ultimate plant. A 3,000-kva station service transformer is connected to each generator bus and supplies all auxiliaries rated over 100 hp at 2,400 v. All smaller motors are served at 480 v. All motors in the plant are of the splashproof type, except the motors on the cooling tower fans. These have TEFC motors.

The enclosed control room is located between the boilers and the turbine deck. One end is glassed in to provide a view of both turbogenerators. The firing aisle is roofed over, but all other accesses to the boilers are in the open. The 2,400- and 480-v auxiliary switchgear is located in an enclosed room, accessible from the ground, just below the control room.

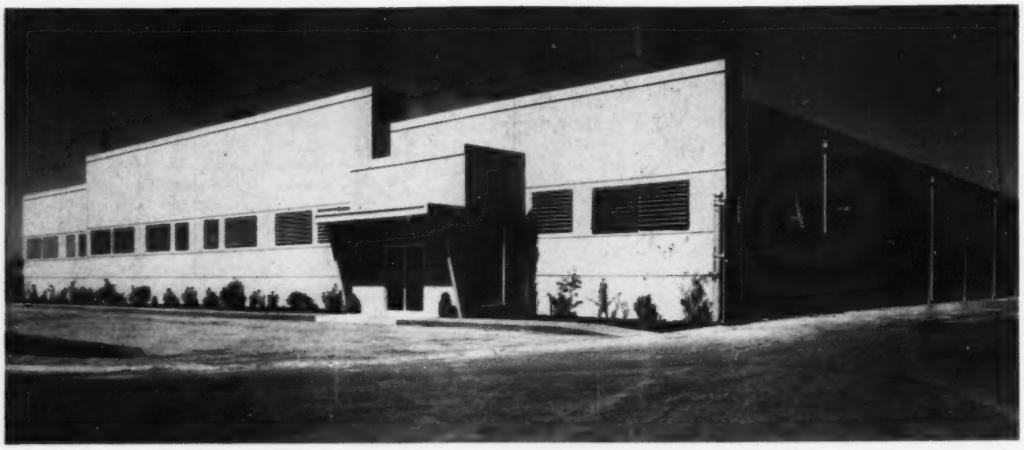
Generators Nos. 1 and 2 are amplidyne controlled, rated at 35,294 kva with ½ psig of hydrogen and 40,488 kva with 15 psig hydrogen. Generator voltage is 13,800 v; and all energy generated, except for plant use, is transformed up to 92,000 v for transmission to the company's main transmission substation at San Bernardino, eight miles distant from Highgrove.

Generator leads are run directly to the low-voltage side of the step-up transformer through an overhead enclosed bus duct. A tap for the auxiliary transformer is taken off just before the duct connects to the main transformer. The generator oil circuit breakers are located on the high-voltage side of the main transformers and are presently also serving as line breakers. Generator windings have double differential protection, elevated neutral and ground alarm features.

The main step-up transformer for each unit is a three-phase fan-cooled unit rated 37,500 kva. Taps will allow operation at 115,000 v when the transmission system is raised from 92,000 v.

A separate building covering 4,275 sq ft was erected to house the superintendent's office, conference room, change room, storeroom and machine shop. No construction storeroom was erected for units 1 and 2 because one of the 80,000-bbl fuel oil tanks was opened for this purpose. A 40x100-ft sheet metal warehouse has been built, however, for construction of the third unit. This will be used later for storage of slow moving plant materials.

Engineering, design and construction of the Highgrove plant was done by the Fluor Corp. of Los Angeles.



Efficiency was primary objective in designing new warehouse and service center facilities for Sacramento Municipal Utility District

SMUD Builds Model Service Center

Efficiency was first consideration in designing new warehouse and service center. Best features of similar recent facilities were incorporated

H. R. LaFortune

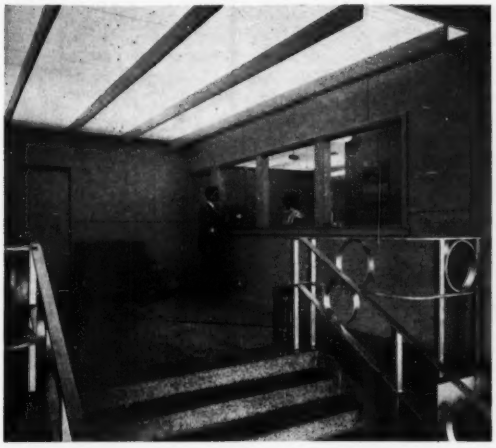
Manager of Purchases and Stores
Sacramento Municipal Utility District

Absence of columns in warehouse makes more room and facilitates use of fork lift trucks

In 1950 when the Sacramento Municipal Utility District decided to construct a new warehouse, a study was made of the deficiencies of the then existing warehouse and of the expected requirements for a future warehouse and service center. The original building was inadequate insofar as floor area was concerned, being less than 100 ft square and was not conducive to efficiency in many other respects.

In addition to outgrowing the 10,000 sq ft of storage space, the type of building, with supporting steel pillars in the center section, limited the storage area and restricted the extent to which fork lift trucks and other labor-saving equipment could be used. Since the building at the outset was considered temporary for warehousing purposes, it had been built at ground level, which was not conducive to efficient loading and unloading of line and service trucks.

With such limited quarters it was impossible to designate certain areas for certain items. This led to consid-



Reception room for offices (left) with attractive luminous ceiling lighting. Right: file area with buyer's offices in the background

erable reshuffling of supplies every time a large shipment of material was received. Construction of lean-tos about the warehouse to house line trucks eliminated much of the outside lighting and the interior lighting proved inadequate. With the exception of doors at either end and air vents in the top of the warehouse, there was no provision for ventilation. Furthermore, being of all-metal construction without insulation, there was the problem of heating during the winter months.

Today the district serves more than 100,000 customers, an increase of over 50% in a little more than five years of operation. This unprecedented growth required a corresponding increase in materials and supplies to maintain service. Consequently, long before the new warehouse was commenced, the old one was badly outgrown and no longer readily accessible to the line and service trucks requiring supplies.

So that the new building would overcome deficiencies of the old warehouse, and to incorporate the latest thinking in warehouse arrangement, the district made a study not only of its own warehouse requirements, but of the warehouses of many electrical utilities throughout the country. It is most grateful to the following utilities who assisted in this study: Central Arizona Light & Power Co.; Chattanooga Electric Power Board; Department of Water & Power, City of Los Angeles; Detroit Edison Co.; New Orleans Public Service; Pacific Gas and Electric Co.; Portland General Electric Co.; Southern California Edison Co.; Utah Power & Light Co.

Roofed over truck level loading dock, one side of warehouse, with line trucks backed in

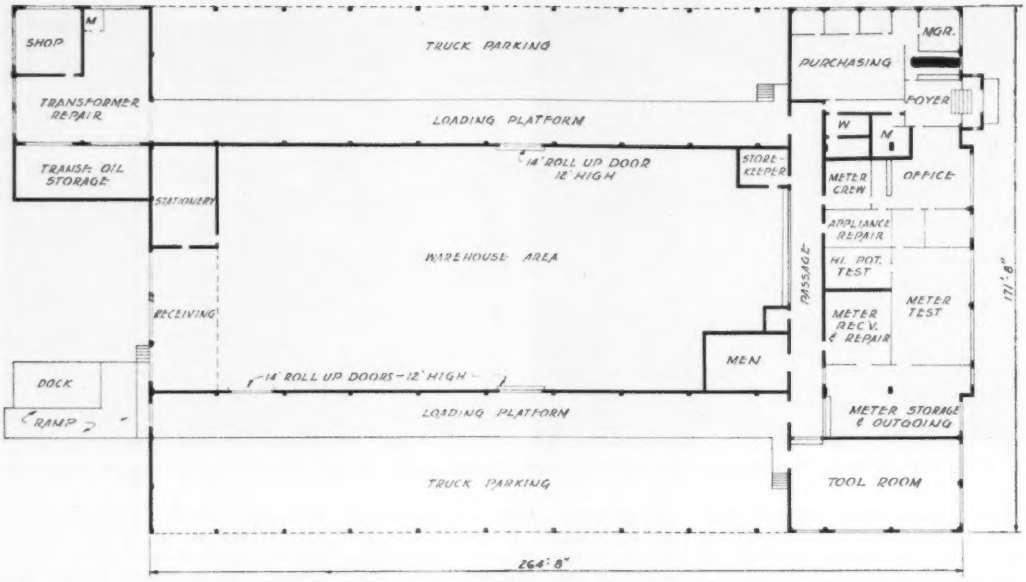
Plans and Objectives

From this study, the following basic decisions were reached by the Sacramento MUD.

1. For most efficient operation, the warehouse should be at truck-bed level and so designed as to provide minimum distance between materials and supplies, and the trucks.
2. To incorporate into the new building certain essential offices that are closely related to the warehouse and line and service trucks operation.
3. The warehouse should be laid out to provide for some future expansion.
4. Storage areas and loading docks should be free of obstructing columns.
5. Adequate lighting and ventilation should be provided.

The over-all area of the new building is 48,000 sq ft. This is divided as follows:

Facility	Sq Ft
Purchasing office	1,600
Warehouse	16,200
Loading dock	6,300
Truck area	12,600
Meter and service crews	5,100
Tool room	1,700
Transformer repair	2,000
Hall, lavatories, etc.	2,500
Total	48,000



Floor plan for service center was developed after visiting a number of utility properties and selecting the best features of each

By use of tilt-up construction with precast columns and panels the district saved about 15% in the construction of the warehouse and office building which, in the final analysis, cost approximately $7 per square foot.

Objectives Attained

The objectives cited above have been attained as follows:

1. A considerably larger warehouse has been built, at truck-bed level, with provision for loading docks at either side of the warehouse. This permits concentration of supplies readily accessible to the line and service trucks.

2. The front of the new building includes the following offices and service departments: purchasing department; meter storage, repair and testing division; appliance repair division; essential supervisory personnel for appliance repairs, as well as underground and substation crews.

3. Storage area of the new warehouse is 40% to 50% larger than the former building.

4. The building throughout is illuminated with fluorescent lighting. A sustained intensity of 50 f-c is provided in office spaces. The warehouse receives ample light for daytime operations through eight skylights, each about 100 sq ft in area. Factory-type fixtures, suspended from the ceiling, are used in storage areas and particular attention was given to adequate lighting between the 7-ft bins for any nighttime operations that may be required.

5. Two large ventilating fans have been placed in the roof of the warehouse with a capacity of 15,500 cu ft per unit, which are capable of changing the air in the warehouse every nine minutes. They enable comfortable working temperatures even on hot days, especially when the large roll-type doors on each side of the warehouse are opened for 12 to 18 in. at the bottom.

6. The offices and service departments in front of the building are air conditioned by three heat pumps, two 5 hp and one 7½ hp. The warehouse proper is heated by five fan-type 15-kw overhead electric heaters.

In addition, the purchasing department office, which is located in the north side of the building, has supplementary heat from electric radiant floor heat.

Warehouse Arrangement

The warehouse is at the rear of the offices, but separated from them by a wide corridor that extends across the building. Besides separating the offices from the warehouse, this corridor serves several purposes:

1. It connects the two loading docks that extend on either side of the warehouse. Swinging doors open into the corridor from these docks so that meter and appliance servicemen have ready access to the meter and appliance repair shops and to offices located in the front part of the building.

2. Line and service crews likewise have ready access from the docks to the warehouse office and service counter. The counter is 39 ft long and, like the warehouse office, is accessible from this corridor.

3. It provides access to the tool room, which is at one end of the corridor.

Material Storage

The warehousing area is 80 ft wide and extends 208 ft back from the corridor and service counter mentioned above. This counter and warehouse office make up the front of the warehouse. Across the rear of the warehouse are two sections, one 21x47 ft, and the other 21x33 ft. The former is enclosed with a 6-ft wire fence, and is the receiving room. The latter is totally enclosed and contains stationery supplies and printed forms. The receiving room was separated from the warehouse proper because of previous difficulties in proper segregation of special items from normal warehouse stock, and the desirability of keeping materials for special jobs always in front of personnel so as to expedite their withdrawal from stores.

The warehouse area is roughly divided in half by an aisleway that crosses between the two electrically operated roll-type doors, which open onto the loading docks on each side.

The arrangement of supplies within the warehouse is as follows:

1. Counter: Small mobile items in great demand are stored in steel bins that make up the 39-ft service counter.

2. Double-faced bins: Five 7-ft-high double-faced bins, 18 ft long and separated by a 4-ft aisle are located at right angles and 6 ft to the rear of the counter. Additional items such as tape, fuses, bolts, nuts, etc., which move rapidly, are stored here.

3. Between bins and cross aisleway: This area is broken up by several aisles extending from the counter to the middle of the warehouse. In this area cases of hardware and insulators, wire racks, cutouts, etc., are located. Immediately adjacent to the doors opening onto the docks are racks containing ground rods, anchors, anchor rods, molding, etc.

4. Between cross aisleway and receiving and stationery room: This section, likewise, is broken up into several areas by aisles and is reserved for various types of conductor. Salvaged materials are checked in this section, which has a scale for weighing of new conductor as well as scrap wire.

There are three 14x12 ft electrically operated steel doors that open onto the loading docks from the warehouse. Two, located in the middle of the warehouse and opposite each other, are used for the movement of materials to and from the line and service trucks. By having the loading docks on both sides of the warehouse, materials can be better concentrated, and the distance traveled between supplies and trucks is materially reduced. The third steel door is near the rear of the warehouse and adjacent to the receiving room and to a truck stall used by carriers and suppliers in unloading supplies on the dock for the district.

Requisitions are received daily from the operating department and materials are put up on pallets during the day and transported by fork truck or dolly through the large doors on either side onto the dock, ready for loading on the trucks, which are backed up to the dock on their return at night. As the trucks come in, salvage items, etc., are removed to the interior of the warehouse where they are sorted and properly credited in the next day. By this loading and unloading of trucks at night, they are all set to leave immediately upon the arrival of the crews the following morning. Incidentally, the loading docks and truck storage area are covered by the extension of the warehouse roof and lighting is provided for this area by eight 100-sq ft skylights and with incandescent lights for night work. Thus, all trucks are under cover when not in use.

Because of the steel and concrete construction and the generally nonflammable nature of the contents, the warehouse does not have an automatic fire sprinkler system. However, 75-ft 1½-in. fire hoses are located on either side of the building and extinguishers are located at various strategic points.

From the district's own experience it was found that columns interfere with proper storage and movement of materials. This was avoided by use of an 80-ft clear span in constructing the warehouse.

The loading dock near the receiving room is extended through and beyond the end of the building. On one side of the extended dock is the end of a rail siding, so that rail shipments can be readily unloaded onto the dock and into the warehouse. A ramp is on the other side of the extended dock and goes down into the yard for movement of supplies by fork truck to and from the outside storage area. A paved outside storage area of 40,000 sq ft is provided at the end of the warehouse, primarily for larger items of equipment and supplies, and transformers.

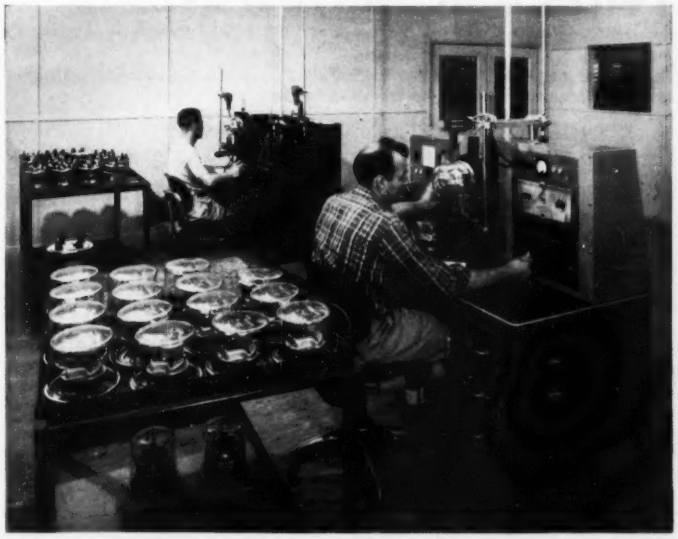
Extending out from the loading dock and truck area in the northwest corner of the building is the transformer repair room. A large fireproof door separates this from the loading dock and transformers removed from line trucks can be carried along the dock to this door where they are taken in, tested and repaired.

To provide maximum storage facilities within the warehouse, the district has been successfully experimenting with the use of pallet bins as observed in use at another utility. These will permit storage of conductor at greater heights thereby making better use of the storage area. Adoption of pallet bins is of course dependent upon use of fork lift trucks, of which the district has two.

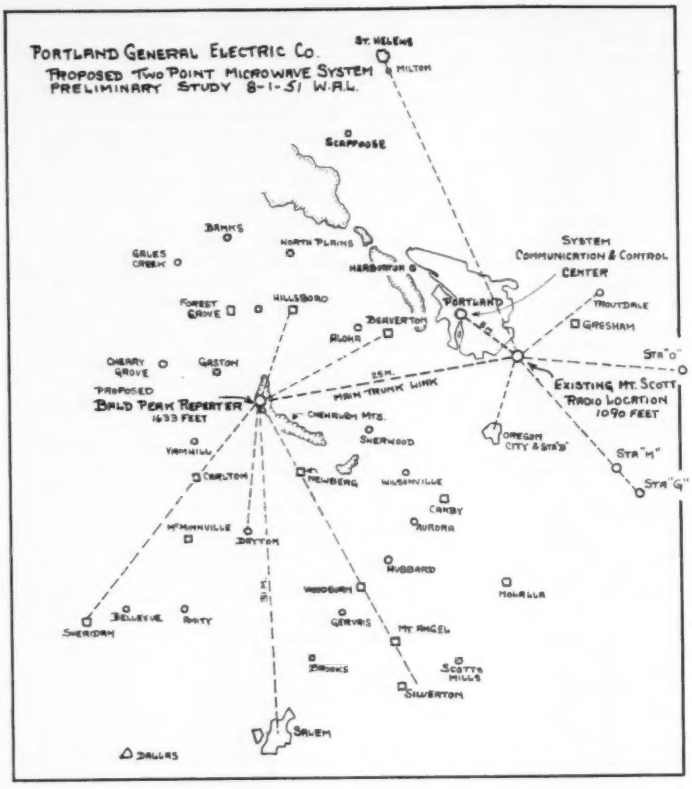
A study is also being made of storage and steel racks and the use of stackers. It is believed that these will permit even greater use of storage area by going to greater heights in storage. The use of stackers, it is expected, will permit narrower aisles than by using a fork truck and, of course, this will also provide more area for storage.

Two large charts are in preparation on which the location of all supplies both in warehouse and in warehouse yard will be designated. This will greatly facilitate storage and disbursement of supplies and will also assist line or service crews who may, in cases of emergency, need supplies when the warehouse is closed. These charts will be located in or near the warehouse office.

In the month's time since the new facilities have been occupied the district has had an opportunity to observe how nearly objectives were achieved. It is gratifying to report that everything worked out as planned and that, if the job were to be done over again, few if any changes would be made in objectives and design.



Service center facilities include meter shop here shown as well as transformer repairs



Two-Point Microwave System Proposed

Portland survey shows microwave to be most economical for system-wide expansion of communication facilities

W. A. Leidigh Jr.

Communication Engineer
Portland General Electric Co.

From the economic standpoint it appears that microwave may be the solution to the problem of expanding the system-wide communication facilities of the Portland General Electric Co. A study of the problem has been under way for more than a year, the results of which here presented should prove of value to other utilities confronted with communication growing pains.

More than half of the people in Oregon live in the region of 2,300 square miles served by the company. Extreme limits of the electrical distribution system, including hydro plants, do not extend more than 50 miles air line from the dispatching center in the city of Portland. Up to the present time, all communication facilities have been coordinated between some 250 miles of privately owned telephone lines, a number of leased wire circuits, and an extensive mobile radio network with fixed stations at all hydro plants. With the advent of system-wide supervisory control and other operating functions a demand for more circuits with better reliability and economy than available land lines was created. Requests for doubling telephone trunk facilities between district offices and the Portland office for ordinary routine business also had to be considered. As stated, it appeared that microwave might be the solution.

Microwave Proposed

It was known that the entire distribution system could not be covered with one repeater. However, if two high-altitude locations as shown by the accompanying map could be found with good "single hop" possibilities to all parts of the area with a good microwave path between them, almost complete coverage would result.

After some 12 years experience in the development of a mobile radio network to cover the entire distribution system, certain natural locations for fixed stations become apparent. Mobile radio coverage is similar to microwave coverage with the exception that the latter is definitely limited to sight range with no obstructions.

The Portland General Electric Co.'s Mt. Scott base station location, at an altitude of 1,080 ft and eight miles southwest of Portland, has already proved its value for mobile radio service. With adequate housing and back-up power already available, it is proposed that this point be used for a repeater to cover the eastern portion of the distribution system and the Portland dispatching point.

After extensive tests to determine the most desirable location for a mobile repeater station to improve service in the western portion of the distribution system, a point just eight miles northwest of Newberg on Bald Peak was selected. The altitude is 1,633 ft and after completing a profile study of the intervening terrain between this point and Mt. Scott, it was found to be a perfect 25-mile microwave path. It is proposed that this location also be used for a microwave repeater covering Salem and the surrounding area. Property has been purchased at this point for a mobile radio repeater with planned back-up power and housing that will cover future microwave requirements.

By reference to the physical chart of the proposed microwave system,

both repeater points can be located. It will be noted that the eight-mile link between Portland dispatchers and Mt. Scott will carry the necessary trunk channels to cover all terminations on the entire network. This link, with the 25-mile link from Mt. Scott to Bald Peak and the 31-mile link to Salem, can be considered as the main trunk facilities or backbone of the system. At Bald Peak, the base station and repeater control problems of mobile radio network expansion are solved, resulting in full coverage of the entire distribution area with a saturated signal. Immediate demands for more communication trunk circuits and several control functions in the Salem area would appear to justify the 31-mile trunk line from Bald Peak to Salem over an unobstructed microwave path.

Other links shown on the physical chart cover points of communication and control functions considered to be of immediate or possible future interest to the power department. Topographic studies showed all paths to be clear and within single hop distance. This is true for almost any point on the distribution system when considering both repeaters, and in a large area a choice of either repeater is possible.

It will be noted that, in several cases, two or more points fall in direct line. Possibilities of single-beam operation looks promising but the economics and engineering of this type of operation must be left to the equipment manufacturer and may prove to be a detriment under the present stage of microwave development.

The only point not covered in this proposal is a hydro plant in a canyon southeast of station G and somewhat hidden from microwave possibilities. However, with broad band carried in mind for the extension of circuits intended for this plant, they were carried to station G and left there for further study.

Channel Loading

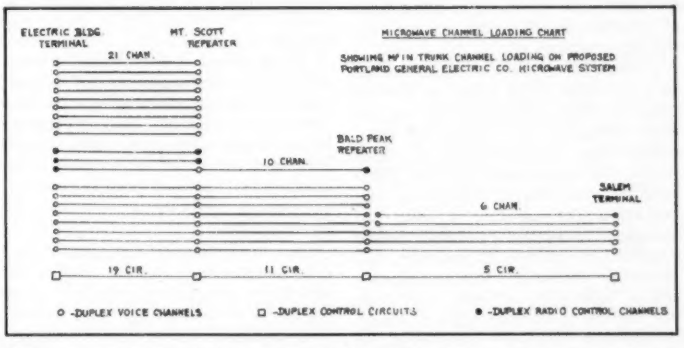
One purpose of this study was to estimate any possible future communication and control needs on the company's distribution system, regardless of present demand, and put them into the most economical microwave terms on a probable circuit loading basis. Thus, the data could be presented at a cost per circuit mile rate for comparison with any other means of communication. It was not expected that the microwave system alone would provide the most economical communications to all points on the distribution system. In some cases where short hauls are involved and extensions from a microwave termination are necessary, the use of power line carrier and leased or private wire circuits may prove more economical.

If the dependability problem can be improved, the installation and use of private open-wire lines probably will be on the increase. Open-wire lines are now being used similar to microwave links by placing small low-cost packaged units, now available from the manufacturers, at the line terminations. Up to five duplex-voice channels and a number of control functions, in addition to the physical circuit, can be added for approximately $1,000 per channel termination. The economy of links of this kind will be highly competitive with microwave for certain purposes, but their use can also supplement a microwave termination by local distribution of its various communication functions.

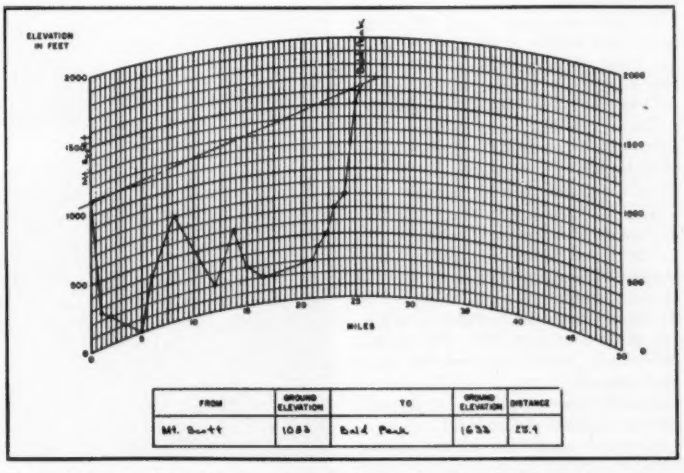
Economy of Microwave

Obviously, the economy in a microwave link is in channel loading possibilities. The bulk of the cost of any point-to-point link is in the radio frequency end and covers property, buildings, towers and back-up power to establish a two-way radio beam. After this two-way radio beam is established, many duplex-voice channels and control functions can be served with suitable and lower cost multiplexing equipment. Thus, if a link is as long as seasonal dependability allows, and fully loaded with channels, the cost per circuit mile is greatly reduced.

For the purpose of this study, it was assumed that future channel loading could be based on full coverage of the entire distribution system with telephone interconnecting trunks serving



Microwave trunk channel loading chart used in study of future system communication



Type of chart used in microwave investigation to determine location of transmitters

all district offices, main substations (except those in the Portland area) and all hydro plants. It was also assumed that supervisory control or telemetering facilities for main substations and hydro plants, outside the city of Portland, might be a future requirement. Although the study covered detailed distribution of all circuits involved, the accompanying channel loading chart shows only the resultant loading on the main trunk links.

It was concluded that with a system so relatively confined, the main backbone microwave links could be economically justified. However, when considering the number of lightly loaded "finger" links necessary to cover points of low circuit demand, an increase in the cost per circuit mile of the microwave system must be expected. The availability of lower cost equipment suitable for this purpose now being developed will no doubt change this cost picture, but the microwave system has remarkable flexibility and the distinct advantage of gradual development to any required coverage.

It must be understood that outside of a few short haul leased or private wire extensions, the proposed microwave system would handle all communications and control functions within the area served by the Portland General Electric Co. It has the possibilities of creating a fully automatized, centrally operated, power distribution system with excellent and proved dependability. Centralized control is inherently a costly item with any means of communication, leased or otherwise. Thus the economy of the system must be based partly on the value of centralized control to utility operations.

It must also be noted that the microwave system had to be designed on a full coverage basis in lieu of a future plan for plant automatization. Although full coverage possibilities proved interesting, it is probable that many points contacted, and even complete links, could be eliminated if the plant requirements were known.

The microwave proposal is now in the hands of interested manufacturers for both feasibility and cost considerations. Technical comments have been favorable especially in regard to the single hop full coverage possibilities. Cost data, on the other hand, have been more of a problem since the proposal covers a system that is comparatively complicated and lacking in detailed engineering.

Cost data submitted up to the time of this writing have been averaged and compared with known figures on microwave links now in operation or under construction. These figures must be considered as only approximate but they do cover all costs of a first-class dependable system including housing, towers, backup power, and RF standby for important terminations.

The estimated cost of the Portland to Salem backbone links including the two repeaters and all facilities for branch circuits is $161,000. The estimated cost of the over-all proposed system, as shown on the physical chart, and including the backbone link is $332,000.

Since the system serves 1,650 circuit miles of control and telephone facilities, the cost per circuit mile comes to $201. This figure is slightly high as compared with other installed systems where exact cost is known. It reflects the present higher cost of the lightly loaded finger links of the system as expected. It is also affected by the very short haul between Portland dispatchers and the Mt. Scott repeater, regardless of the heavy circuit loading.

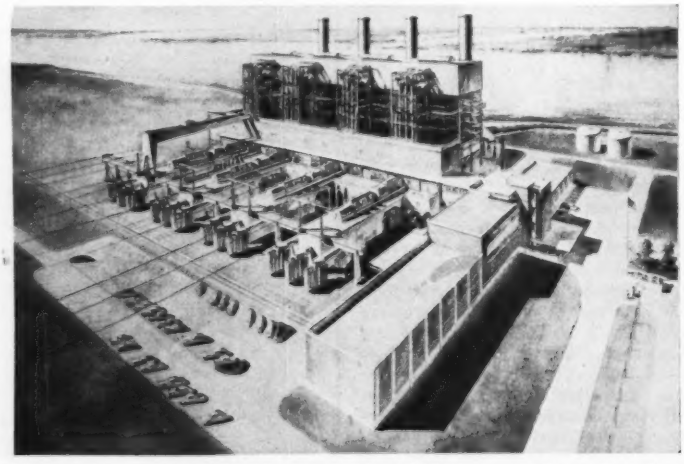
The problem of this short link may not have to be considered for several years during the development of the system. Leased wire facilities may soon be available, under new service policies, that will serve in its place until loading demands and possible reduced microwave equipment costs justify its construction.

This new policy covering leased circuits has just been announced and the subject of economic comparison with the entire proposed microwave system is a detailed study. Tariffs vary in different areas but for comparison purposes an average circuit mile per month cost is available in any area. Considering an installed cost of $201 per circuit mile and an estimated $10 per mile-year for maintenance, the microwave is still the most economical for a system of this kind, especially where leased wire facilities are not available in parts of the area.

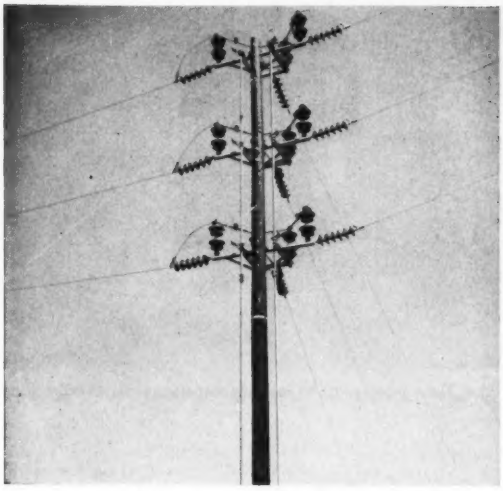
Considering that 1,650 circuit miles of private wire lines could replace 1,650 miles of microwave with the same dependability and direct route, the cost of the microwave system at the installed and maintenance figures given is much less than the cost of private wire lines at $250 to $1,800 per mile installed, and $116 per mile-year average maintenance.

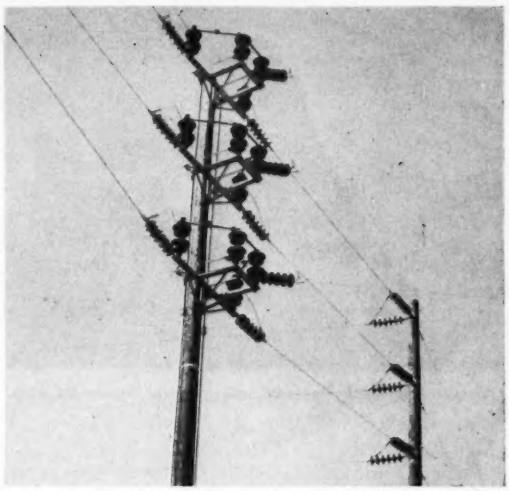
Much more engineering must be done on a system of this kind to work out the many technical problems involved. In fact, each link must be given individual technical and economic consideration after exact demands for its communication functions are known. However, the study did bring out the importance of developing the two high-altitude locations, with full consideration of their possibilities for future microwave repeaters, especially when present demands for mobile radio expansion require their use.

The system, even on the large scale covered in this study, appears to be more economical than any other means of communication, with a greater degree of dependability in its favor. It is also known that a microwave system of any desired coverage is made possible by the natural topography of the Portland General Electric Co.'s distribution system.



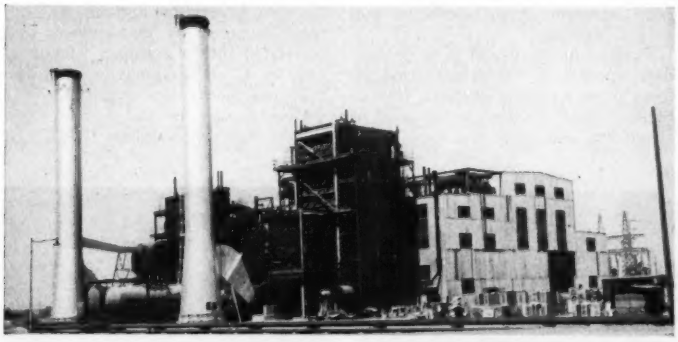
PG and E's new 600,000-kw Pittsburg station will be a completely outdoor plant

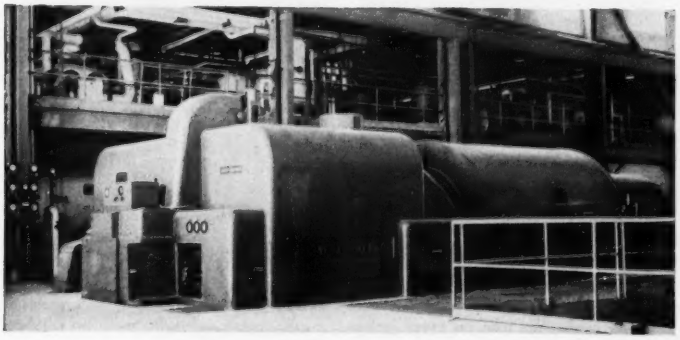




Interrupter Switch for Single-Pole Mounting

First switch of its type on the West Coast, designated as GOABS (gang-operated air break switch) by W. N. Matthews Corp., the manufacturer, has been installed by the San Diego Gas & Electric Co. The switch, here shown, is for mounting on a single pole, rated 100 amp 69 kv, and is used by the utility for tapping off to a substation from a loop line. Two sets of blades make possible feeding straight through on the loop, or feeding the substation from either direction. Of particular interest is a quick break feature using spring-loaded arcing horns by virtue of which the switch may be used to break the charging current of a section of 69-kv line, or to interrup load current. In a test on an eastern utility system, the switch interrupted the charging current of 61.5 miles of 66-kv line with an arcing time of four cycles and no restrikes.





El Centro Addition

Added to the El Centro steam plant of the Imperial Irrigation District is the new boiler and turbine-generator addition shown in the accompanying photographs. The unit is a 30,000/33,000-kw preferred standard Allis-Chalmers machine. The steam generator is a Babcock & Wilcox unit operating at 850 psi and 900°, with capacity of 300,000 lb of steam per hour. Oil and natural gas are burned.

The initial unit installed in 1948 is of 20,000-kw rating with steam conditions of 725 psi and 825°. Both new and old boilers are of the outdoor type, but the plant is enclosed because of dust and dirt.

Correction

Two typographical errors appeared on page 95 of the June issue in the *Nation's Nastiest Water Feud,* by Frank J. Taylor. The Colorado River flow was given as 20 thousand instead of 20 million acre-ft. The amount for which the Metropolitan Water District bonded itself should have read $200 million instead of $20 million.

Offices are lighted by louvered industrial-type fluorescent units

Warehouse employs RLM incandescent fixtures on Q-cell ceiling

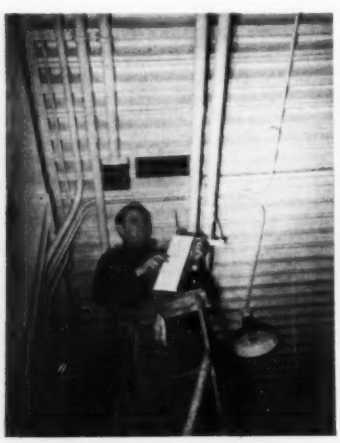
Functional is the Word for It

Wiring and lighting befits the structural design of Coast Counties Gas & Electric Co. new operations center in Santa Cruz

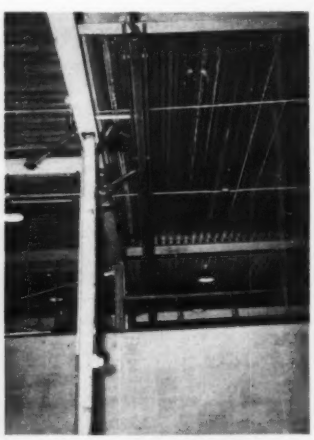
Everything about the new operations center of Coast Counties Gas & Electric Co. at Santa Cruz has been designed for its particular function. It is only natural then that the wiring installation, designed by Scott Beamer and Henry Tilson and installed by Frank Carroll Electric Co., should be functional too—and it is. It makes use of the building itself as part of its raceway system. It is flexible and fits the various operations necessary in various parts of the 49,000-sq-ft office, classroom, shop, warehouse and garage building.

Purpose of the center is to consolidate operations formerly carried on from three separate locations, replace facilities that had become too small or outmoded and serve the rapidly increasing number of customers in the area. The layout represents the integration of the thoughts of operating foremen, supervisors and superintendents, tempered by management and correlated into a compact functional unit by C. E. Sommarstrom, industrial and mechanical engineer.

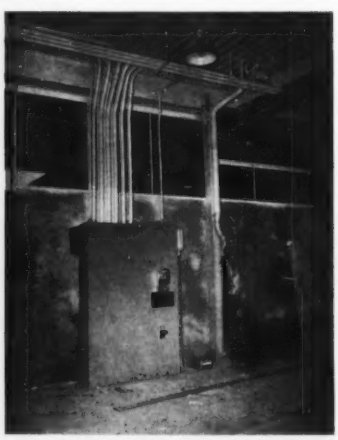
Construction method decided upon for the one-story building, 100x225 ft,



Contractor Frank Carroll removes cover from access hole cut in Q-duct where feeders come in from conduit to panelboard



Junction box on Q-ceiling where feeder for crane system comes out. Trolleyduct collector conductors feed the crane motors



Main breaker panelboard with conduits feeding upward to Q-ceiling then across it to the particular cells used as conduits

Q-ceiling makes special lighting possible for repair shop benches

Classrooms for crew training are lighted by concentric ring units

was a 5-in. concrete floor in which there was to be no electrical conduit, a welded structural steel frame with Robertson Q-floor of cellular steel for the roof deck. The walls of precast concrete, 5-in. thick, formed with channel members and angles that both served for the casting and stiffening members and provided means by which to weld the walls to the steel columns. No conduit was cast in these walls, necessitating surface wiring for electric service. The cells in the roof were used as wiring raceway wherever possible for both lighting and power circuits and for low-voltage switch control that is employed extensively.

Service comes into the building underground to a main breaker panel near the center of distribution. Here a 500-amp main breaker and breakers for the feeders to subpanels are mounted in one compact cabinet. Conduits run up to the steel Q-deck and entrance is made at pull boxes bolted to the under side of the steel deck channel through which a hole was cut with a hydraulic punch. As gromets were unavailable, bushings were used to protect the wire. For lighting fixture outlet boxes 1½-in. holes were cut through the metal ceiling from above with hole cutting saws before the roof insulation and roofing were installed. The outlet box is bolted to the lower side of the duct and bushings used to protect the wire. The upper hole is patched over.

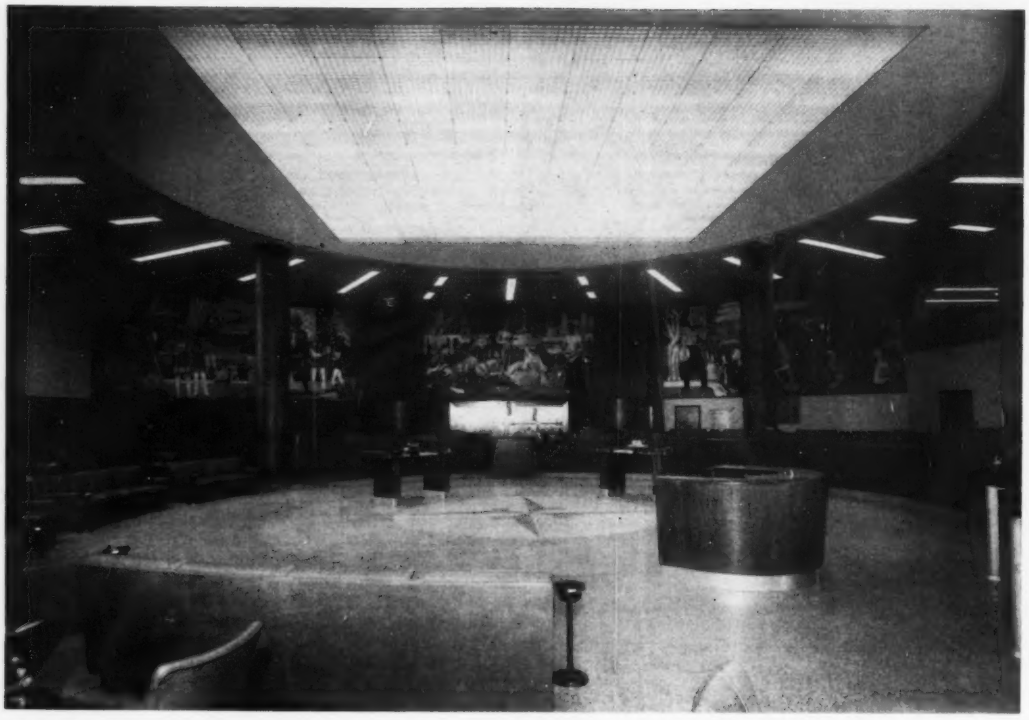
In cases where access is needed to the ducts for pulling wire a section was cut out and a cover, conforming to the duct, made to put over the aperture.

Other wiring features are that all convenience outlets are of the new grounding type and in the offices Wiremold is used along the baseboard for outlets. Office lighting is done with Leader industrial units lamped with 5-ft 100-w fluorescents for low surface brightness. Square D low-voltage control is used for lighting circuits extensively, those in the classrooms or meeting rooms on master control.

Power circuits to the overhead cranes, tramrail and monorail systems are also run in the Q-duct. All collector conductors are in trolley duct for safety. Feeders to the gantry crane across the railroad siding are also run in the Q-duct across the building, then down the other side and across the yard underground in conduit. The yard lighting was similarly fed. Floodlighting is done with 1,500-w units mounted on poles or on the roof of the building. The gasoline pumps and island lights in the truck yard receive service the same way.

RLM lighting units mounted either on sheet steel panel below ducts, directly on the Q-ducts or on conduit fastened to the duct

Grease racks at the garage end have sunken pits joined by an access passageway. Lighting and convenience outlets in the passageway are explosionproof. Along the sides of the grease pits vaporproof units under air pressure house the fluorescent lamps



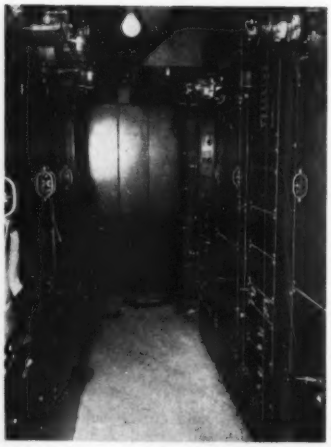
Circular bank floor is emphasized by spokelike arrangements of recessed lighting troffers around the center square louverall ceiling

Designed for Full Banking Service

Like any other business today, banking is making itself more accessible to its customers. Parking facilities, drive-in deposit windows, suburban branches are some of the facilities being employed by banks and savings and loan companies. In such arrangements electric service plays many important roles.

In San Diego Federal Savings & Loan's new building, finished last year, are probably found a combination of more such facilities than are to be seen in any other institution. This results from a five-year study and planning by its president, Roy E. Hegg, who toured the country seeking ideas for the new building. His is the circular banking floor design which Louis Bodner, architect, incorporated in the plans and for which Will Lipscomb, electrical engineer, provided electrical design.

The building is a four story structure of 100,000 sq ft, containing a 125-car garage in the basement. The upper two stories are for future expansion and rental, the San Diego Federal occupying the rest.



Switchboard room with separate meters

Its lighting has been designed to be an integral part of the interior pattern. This is most notable in the large circular main banking area. To light the center public area, a large Sylvania louverall ceiling in the form of a square is lighted by slimline lamps on channels in a white painted chamber above the egg-crate louvers.

Around the periphery of the circle, where the desks of the officers and staff and the cashiers' counters and the records are arranged, the lighting troffers with slimline lamps are recessed like spokes of a wheel from the center to the outer walls. Some of the troffers are broken where an air conditioning Anemostat is inserted. To

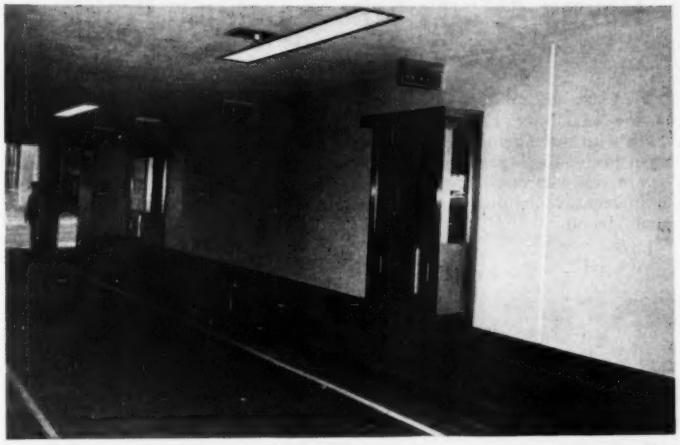
highlight the big mural along the rear wall, Gotham fixtures conceal reflector spot lamps.

Lighting of the other office areas, such as the mezzanine where the home planning department, the public meeting hall and the lunch and rest rooms for the women employees are located, make use of the same Guth recessed troffers in the ceiling. In Hegg's private office, paneled in mahogany, lighting is done with three recessed Rambush down-light units, augmented by two ornamental end table lamps. In the ladies lunch room and lounge a similar lighting scheme is used. The kitchen is all electric.

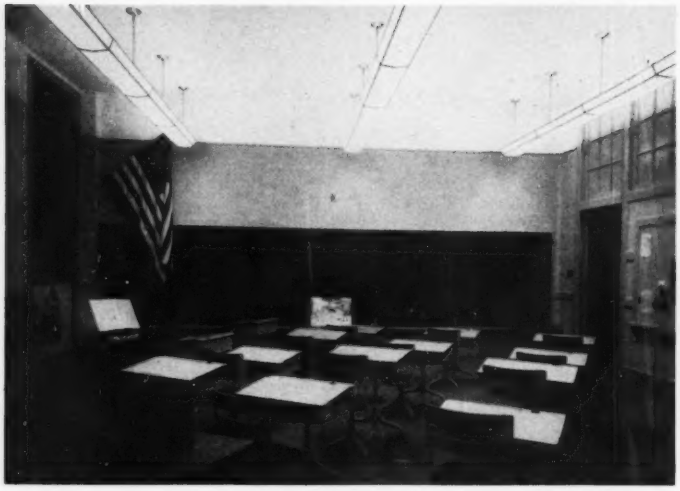
For the rental floors the ceiling units are so arranged that future partitions can be placed between sections of lighting units and provisions were also included for hall lights. To furnish power for office machines throughout the building, floor boxes are conveniently located and convenience outlets are to be found on all pillars and along walls. Telephone conduits are placed with similar convenience in mind.

The other electrical facilities are not so noticeable but very useful. At the garage entrance is located a driveway through the building for depositors and customers to enter. A photoelectric cell in the ceiling flashes a signal inside for a clerk to come to the auto deposit windows (two of them). A push button may also be used to call. Or the garage attendant in a kiosk can signal for a clerk. Two-way communication can be carried on between the customer and the car and the clerk inside. Deposits can be made into a drawer that slides out, the pass book notations made inside on an NCR machine, the pass book returned in the drawer, and when the customer drives out a photocell actuates the outer garage door. Photocell-operated doors also open at the main entrance. The sound system includes music throughout the building, facilities to broadcast news from the main floor, intercommunication throughout, even from within the vaults should someone be locked in.

California Electric Works made the complete electrical installation and maintains it now as well.



President Roy E. Hegg's private office has built-in TV set, is lighted from ceiling spots in decorative fixtures. In center are the auto entrance tellers' windows, with photocell in ceiling to announce the presence of a customer inside. Each window is also equipped with two-way speaker and push button. Bottom: interior of drive-in tellers' windows. Also shown at left is one of the record safes, holding the card files



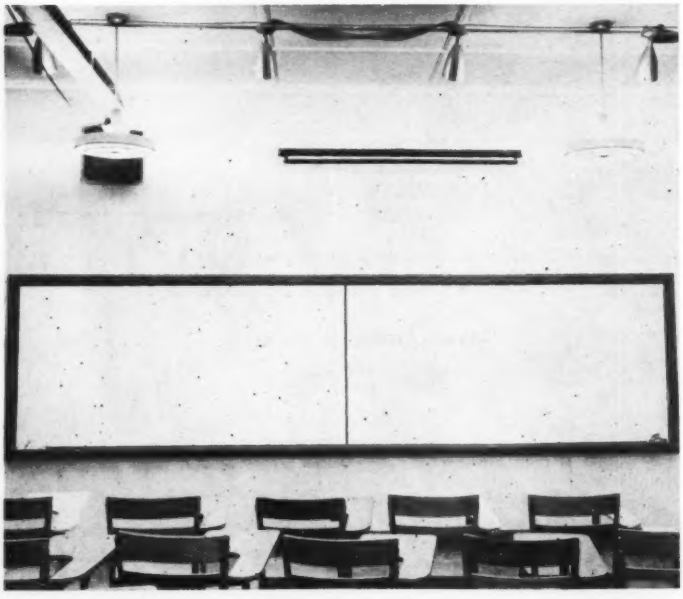
Hawaii Attacks School Lighting Problem

First step toward adequate lighting in the schools of Hawaii has been taken with the relighting of one classroom in the Kaahumana school. Success of this trial installation may lead to an extensive lighting modernization in all schools.

The classroom chosen was typical, with windows on the sides, dark floors and equipment, and inadequate lighting. Walls were redone in several pastel shades of green, apricot and buff and white for the ceilings. The dark oiled floor was cleaned and painted a light beige. A Vismatic green coating was applied to chalkboards. Desk tops were refinished with a dull varnish to reduce brightness contrast.

New lighting consists of 21 2-lamp Day-Brite Viz Aid units. These were hung in three rows of seven units each. Average intensity was 52 f-c maintained.

The accompanying before and after photographs show the striking improvement in the lighting.



Chalkboard Lighting

Effective lighting for a chalkboard as worked out in a test installation made by the San Diego State College in cooperation with illuminating engineers of the San Diego Gas & Electric Co. consisted of the arrangement of lighting units as shown. Five Swivelier H-57 units equipped with 150-w R-40 flood lamps were directed at the chalkboard. General classroom lighting was provided by eight Smoot-Holman RK 500-S concentric light fixtures with 500-w silver bowl lamps.

With indirect room lighting only, average chalkboard intensity ranged from 19 f-c at the top to 11 f-c at the bottom; with chalkboard lights only, the readings were top 38 f-c and bottom 16 f-c; both room and chalkboard lights, top 48 f-c and bottom 48 f-c. General room lighting averaged 30 f-c.

ELECTRICAL WEST Contractors' News Letter

QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.

Outlook better

New construction took a spurt for the better with relaxation of controls on credit and copper and the coming of warm weather. But the volume of it wasn't sufficient to keep competition from being sharp and many bidders on each job. Materials seem to be in good supply except for some wire varieties and an occasional fitting. Wholesalers' stocks look ample to take care of more business than there is. Labor supply seems ample except in some heavy defense construction areas.

Look for business

Development of new business again interests electrical contractors. At both District 6 and 8 meetings of National Electrical Contractors Assn. in Santa Barbara and Colorado Springs, the subject was revived. NECA told its members it was preparing new kits of ideas and ads to drum up some more wiring business and to sell the specialized services of the qualified electrical contractor—meanwhile aiding contractors to be well qualified by taking its tailor-made accounting and estimating courses.

Standard size

Luve-Tile, a one-foot-square louvered panel of molded styrene, is being marketed by J. A. Wilson Lighting & Display Inc. of 995 Main St., Buffalo, N. Y., for luminous ceilings or for flexible application in patterns in a multitude of lighting applications. Comes in colors also. Special clips hold tiles together.

More housing

Two more critical defense areas were certified by the DPA—Butte, Mont., and Roseburg, Ore.; Butte because of expanded activity in copper mining with an expected immigration of workers to a housing short area; Roseberg because of the plywood and logging boom which has drawn in thousands for whom there are not enough houses. Public Law 139 relaxes credit and liberalizes mortgage insurance for FHA housing.

Wire prices

Wire price increases were authorized by OPS at press time but manufacturers had not yet issued new sheets. The increase granted was 4½c per pound to distributors who in turn can pass on the increase with their regular markup added. The new price reflects the import price increase for copper on the world market.

Honored

George F. Hessler, vice-president of Graybar Electric Co., was awarded the Distributors Medal of the James H. McGraw Award for Electrical Men at the annual convention of National Association of Electrical Distributors in Atlantic City, June 11. He received the award in recognition of his constructive contribution toward coordinating the essential funcions and services of the electrical distribution industry with the needs of the government in the current national emergency.

Prosecutions threatened

With controls extended by Congress for a 10-month period and a new crisis in steel supply caused by the steel strike, whose settlement was nowhere in sight at press time, NPA called for a stepped-up drive against violators of the NPA regulations. Fearing a black market in steel, NPA says it will make no deals for fines with those who offer to plead guilty but will drive for criminal prosecutions.

Welfare away!

Skids were greased by WSB for any kind of welfare plan the union can bully through now with a revision of its regulation 19. Previously it had specifications for the kind of welfare plans that were approvable. The single test now is the debatable, unspecific statement, "the board shall disapprove any plan which it deems to be unstabilizing." What the board majority considers "unstabilizing" is shown by experience to be quite elastic when it comes to labor's demands. Insists on being asked, though, on a prescribed form. Once acknowledged by the national board, if WSB doesn't protest within 30 days, it's in. This doesn't go for employers who put in wage increases without the board's written approval. If they do, the amounts paid in extra wages cannot be deducted from income tax as operating cost.

Scheduled

Dates for the National Electrical Contractors Assn. annual convention have been set. It is to be at the Morrison Hotel in Chicago, Oct. 6-12, with general membership meetings Oct. 7-10.

Slow in motion

Red-tape delays in processing approvals through Construction Industry Stabilization Committee and then WSB are causing arguments. Contractors cannot pay increased wages until they receive official notice. Union members on CISC wire the local that approval has been granted. The local begins demanding the pay right away. Only thing contractors can do is put the money in escrow until they receive their notification. Retroactive pay cannot be paid either beyond the approval date from WSB. It sometimes takes from six to eight weeks to get approvals through the government mills. Unless a contractor starts charging for the increase to cost-plus and time-and-material customers he is apt to pile up a deficit. Immediate notification is being pleaded for.

Labor pains

The $3 an hour wage rate, whether asked for or negotiated in the first place, seems to be stylish in California, for those who did not get it are coming back for more. In San Diego, where $2.93 had been agreed upon, the union asked for reopening for $3 when Los Angeles agreed to that figure. Even Las Vegas, Nev., with an approval of $2.85 now wants the $3. Fresno had agreed to $2.90. In Oakland the question taken to the Council on Industrial Relations was whether "parity" with San Francisco, which had granted the first $3 scale, could also mean the protection of work in progress under the existing scale as it did in San Francisco. The council's decision indicates it did not understand the nice distinction of words. It simply ruled, "no protection," approved the $2.88½ plus 4% vacation, which equals $3, and said the union could not nullify its agreement because its termination notice was not long enough. Now the NECA and Local 595 are in negotiations again.

On the floor

Senate Bill 2907, sponsored by NECA and other specialty contractors to stop bid peddling by general contractors, has been reported out of committee and was to go on the floor before Congress recessed.

Copper eased

Copper for residential and commercial construction was opened up as of July 1 by amendments to M-100 and CMP-6, but the expected relaxation on steel was held up by the steel strike. Self-certification for up to 50 lb of copper for residential construction, or of 175 lb where copper piping is used in plumbing, and of 25 lb for alterations is now possible. In commercial buildings the 200 lb limit was raised to 750 lb per quarter. No change was made for industrial construction. Aluminum can be used, one pound for each two of copper substituted. CMP allotments for 431 projects were made in June, 20 in California, 3 Arizona, 7 Colorado, none in Idaho and Utah, 2 Montana, 1 Nevada, 3 New Mexico, 4 Oregon and 6 in Washington. These are for buildings bigger than the self-certification.

Complete data

All-Brite, made by Fluorescent Fixtures of California, San Francisco, Portland and Los Angeles, has issued a new attractive and informative catalog to supersede all previous ones. It opens with index and then a listing of accessories and parts, then the complete fixtures of all types and data concerning them. Of value to all who specify and design lighting installations as well as to those who install them.

Symposium

Techniques of Plant Maintenance—1952, is the title of an 182-page, 8½x11 proceedings of the annual Plant Maintenance Conference and Show, just published by Clapp & Pollak Inc., 341 Madison Ave., New York. It contains all the papers presented, plus 717 questions propounded by 2,100 engineers from every major industry. It also includes a Westinghouse manual. All who attended get one free. Others must pay the $6 cost for copies.

Credit ease

Easing of Regulation X was more propaganda than real relief, for down payments on houses are still large and payments stiff, but the cost of building has been pushed up so by wage increases and fringes that the quality is sacrificed if prices are held down. Less house for more money.

Fluorescent street light

General Electric Co. now offers a 6-ft fluorescent street lighting unit, employing four 100-w rapid-start lamps. A 6-ft plastic housing surrounds the ballasts. It is designed for use in downtown areas and for whiteway lighting; can be operated on series or multiple circuits. Up to now Europe has led in fluorescent street lighting. With this new unit, it is hoped the U. S. can make rapid strides with this new method of lighting streets.

Backed by vote

Charles Foehn, in what had been expected to be a close vote, won by almost two to one the re-election as business manager of San Francisco's big Local No. 6, IBEW. Foehn is also a member of the IBEW national executive council; has been business manager of No. 6 since 1937. Sig Hansen was elected president, Bill Reedy, vice-president, and Nick Siggins, popular electrical inspector, was re-elected with highest vote to the executive board.

Whose work?

Jurisdiction over operation of machine equipment used in line construction work is being challenged by the Operating Engineers union in northern California, which has filed with NLRB for an election. IBEW is contesting the move and NLRB has been surveying the practice in the area to gather data before hearings are held. In a similar case in the Northwest the IBEW has filed, claiming jurisdiction on such work in line construction and both the operating engineers and the teamsters are in the jurisdictional battle. First hearing was scheduled for July 8.

Assistance

Utah-Idaho Chapter, NECA, is holding a special meeting July 30 to consider an assistant for Chapter Manager Al Howarth who is recovering from illness and is hoping to return to the job in a month or two. The assistant would live in Idaho and work chiefly in that area.

Open spaces

A Nevada chapter of NECA is being formed. A nucleus of eleven members has started the move in Las Vegas as a branch and it is hoped to get Reno and Elko branches established also. The scattered territory makes the management problem of such a chapter difficult, as experience in other similar areas has proved.

All in one book

Lincoln's Industrial Commercial Electrical Reference in its second edition is off the press and available on approval from Electrical Modernization Bureau, 110 Mamaroneck Ave., White Plains, N.Y., at $25 a copy. But it really is an encyclopedia of electrical knowledge, has 1,760 8½x11 pages, 500 tables, 400 diagrams and 1,400 illustrations, contains the NECode and NEMA and ASA standards and data from 100 manufacturers of electrical equipment. R. A. Lincoln, consulting engineer, is its editor.

Pass on

Square D Co. has given resistance welder control equipment to five Western universities' engineering departments, as it made a change-over in its Los Angeles plant from mechanical synchronous to electronic welder equipment. Stanford, LA Trade-Tech Junior College, CIT, U of Washington and U of Denver were those receiving the equipment.

Useful data

Protective Maintenance of Motors and Generators is a new booklet published by the renewal parts section of NEMA. Already in a third printing, it sells for 50c in single copies, less for quantities. It is designed for all personnel who do work at repairing, rebuilding or maintenance.

Touch

Eichorn & Melchior have now been appointed factory agents in northern California for the Touchplate line of low-voltage relays and equipment.

Two in one

Electro Silv-A-King Corp. is the new name of a merger of Electro Mfg. Co. and Bright Light Reflector Co., makers of lighting fixtures in Chicago and Bridgeport respectively. Representation in the West for the two lines will be combined, the manufacturers state.

Versatile troffer

Mitchell Mfg. Co. showed its new and versatile Uni-Flow troffer at the fourth International Lighting Exposition in Cleveland last month. It gives designers and contractors a selection of 2,442 different lighting combinations with its basic units of 2- 4- 5- 6- 8- and 10-ft lengths, shallow or deep, with choice of shielding, number of lamps, etc.

For the birds

A correspondence course for apprentice linemen who may be out of town on line construction and unable to attend school sessions is being considered in the Denver area, according to Edwin Mackey of the U.S. Bureau of Apprentice Training.

Quick gluer

A short-wave diathermy method of welding wood with a portable kit is being produced in Los Angeles by Merit RF Wood Welder, 2758 Whittier Blvd. The device dries glues quickly when used on woods, plastics, formica, etc., speeds gluing of joints, patches, etc.

Deadline for 1953

Last chance to revise the 1953 edition of the National Electrical Code will be before Dec. 1, 1952. Panel reports on all proposed changes up to now are being printed by Aug. 1 for consideration at the fall annual meetings of IAEI and other interested groups. Final action will be taken Dec. 1 and the new code published in 1953.

Restrictive?

Union membership requirement for apprentice training under a public school system program was questioned as to legality in the San Francisco Board of Education and the board's legal advisor was asked to inquire into it.

Accept the industry

Instead of its own special standards the federal government and the military services will use nationally recognized industry and technical society standards "to the maximum extent practicable" when it makes up specifications and standards, ASA was told by Willis MacLeod of the General Services Administration. This will be good news to bidders.

Stoop to conquer

A supplemental agreement on underground duct work is proposed by the I.O. office of IBEW in San Francisco as a means to help electrical contractors remain competitive with general and dirt-moving contractors on underground construction jobs. The number of helpers to journeymen would be increased and at a pay scale more near that of laborers used by the other types of contractors. This and a number of other adjustments came out of a meeting of an NECA committee from various District 6 chapters and officials of the union in San Francisco, June 16, recommended at the Santa Barbara District 6 NECA conference in May.

More converts

Adequate wiring activity in the West is taking on new life in all areas, John Bigge of the National Adequate Wiring Bureau found on a recent tour of the West. Tacoma is organizing a certification program and the PUDs in Everett, Wash., and in Vancouver Wash., are interested in doing so. The Coast Counties Gas & Electric Co. is interested in starting a program in the Santa Cruz and Watsonville area. The Sacramento Electric League is active and is eager to start on the bureau's new program for modernization of the wiring in old homes. In Southern Colorado Power Co. territory, a program has just been initiated and the Denver region program is gathering momentum.

Old made like new

Rewiring of existing homes, some 20 million of them, is now added to the aim of the National Adequate Wiring Bureau and it has prepared a promotional package of a campaign idea book, two direct-mail folders, 18 small space ads for contractors and other helps to use in such a campaign. In one such drive electrical contractors got 292 modernization jobs at an average of $162 per job and the utility kwh sales increased by 30%.

Enclosed

Paramount Industries have developed a line of Craftlite fluorescent lighting fixtures enclosed in Plexiglas, vapor tight, in clear or frosted, that reduce maintenance to an easy cleaning of the outside of the fixture.

Adaptable fitting

Miller Co. of Meriden, Conn., maker of "Ceilings Unlimited" troffer systems, has a new feature for its slimline lampholders. Called the "Socketbox" it consists of two or three individually mounted lampholders fixed to a common face plate, permitting wiring to any series or lead-lag ballast, making easy replacement of a damaged socket or of adding a third lamp to a two-lamp fixture without replacing the entire lampholder.

To the mountain

Contractors outside of San Diego, in Encinitas, Carlsbad, Oceanside, Fallbrook, Vista and Escondido, are to be given the full story of what the Electrical Contractors Division of the Bureau of Home Appliances of San Diego County is doing to stir up more business, at a meeting at Vista Inn, July 25. The entire executive committee of the division plans to be there.

Qualified lighting

Postage is the only cost to an electrical contractor, plus his list of names of prospects he wants the literature sent to and his letterheads and Sylvania Electric Products does the rest in its 1952 promotion program for electrical contractors. He gets emblems to identify himself with the advertising, sales building kits and other sales helps. Sylvania does national advertising urging people to go to their electrical contractor for lighting information, service, maintenance and installation. A national TV program, "Beat the Clock," also advertises contractors. The mailings are aimed at building contractors and architects and to stores, offices and factories.

ELECTRICAL WEST Sales Guide

News Letter

July 1952

FOR THE ELECTRICAL MERCHANT OF THE WEST

Appliance business came back to life almost everywhere in the West in June and was still going strong as July came in with its political conventions to stimulate television buying. Hot weather shot refrigerator, freezer and air conditioner and fan sales upward. Even ranges were selling better as house construction picked up with some of the controls eased a bit. Manufacturers were holding sales meetings to show new models like mad, launching sales promotions and dangling incentives like carrots before salesmen's eyes. Distributor shifting was still going on, key men jumping to other jobs and companies. In other words, "situation normal."

Seasonal survival

At press time Congress was battling over Fair Trade, debate on the floor having reached almost filibuster proportions with a Congress eager to adjourn to get to the conventions. It may have passed or died by the time this reaches you. The fight indicates the strong differences of opinion on Fair Trade. It is not all smooth sailing.

Fair chance

Dynamic manager of the Appliance Merchandisers Assn. of Phoenix, Jack Canady, resigned to join the Palmer Mfg. Co., makers of air conditioning equipment. No successor had been named yet. While refrigerators and freezers were the scheduled promotion of the month of July, the advent of coaxial cable for direct transmission of the political conventions into Phoenix from Chicago, via Los Angeles, was seized upon for a "tremendous TV" promotion, with a popularity contest among 16 lovelies for title of Miss TV Cable, each miss representing a make of TV and sponsored by its distributor. These gals appear on TV programs, make public appearances, campaign for votes. What chance has Taft or Eisenhower?

Arizona activity

While Business Week predicts that most manufacturers will spring new yearly models beginning in January, a number have released new ones now. Frigidaire in a series of meetings introduced its new all-porcelain clothes dryer with a condenser to remove moisture and lint; Crosley and American Kitchens (cousins under Avco) sprang a new dishwasher in similar meetings; Deepfreeze, pioneer of the chest freezer, brought out a vertical one while Amana, champion of the upright, now has a chest type also. Norge has upright freezers, so has Westinghouse, to go into homes lacking in floor space. Gibson's Diamond Jubilee Special is a 14-cu-ft chest freezer in the size of a former 10-cu-ft model. Kelvinator joins Frigidaire and L&H with a new 30-in. electric range. Perfection announces its first two-oven electric range with. glory be, an adjustable lamp to see into the cooking.

New models emerge

In laundry equipment Bendix has shown its new "perfect pair" of automatic washer and dryer to fit together mounted against the wall and is aiming its promotion to convince housewives its equipment is safe to use with synthetic fibers and garments marked "for hand washing" only. Duchess unveiled a new automatic electric clothes dryer at the Chicago market. It has thermostat control instead of time control. Stiglitz Corp. of Louisville has also introduced new dryers at a low cost.

All in the wash

Electric housewares news include Sunbeam's new cooker and deep fryer that first hit the Mountain States, then was introduced to the Coast in a series of demonstration dinners by Sunbeam people. . . Landers, Frary & Clark added a deep fryer to its Universal line too. . . Burpee put a five-year guarantee on its deep fryer. . . Nesco has added two new infrared broilers to its line of roaster ovens and accessories, in family size and table size. . . Arvin will have an automatic "Coffee-Perk" on the market in August, 3 to 9 cup capacity, with a reperk feature for stronger brew, to retail at $29.95. . . And Aluminum Goods Mfg. Co. also brings out a new Mirro-Matic chrome automatic electric percolator, at a Western price of $21.95. . . Hoover Co. has a new electric steam or dry iron for the fall to sell at $18.95. . . While on the cold side, Chicago Electric showed a gallon size electric Handy-freeze ice cream freezer for the home with extra self-storing cream cans to put away in the home freezer, priced $28.95.

Table cookery

Telechron will have six new models and a consumer contest to pep up clock sales this fall. . . And Westclox has a Sphinx alarm clock in smaller size, with lines like the snood on the Sphinx. . . Phillips Industries, the Dutch company, will try out sales of a Norelco electric razor, made in Holland, in Los Angeles and three other U.S. cities.

Clocks

Fan and air conditioner business got a boost from nature when the usually cool Rocky Mountain region was caught with its fans down--in inventory--by unusual hot weather. Of a sudden, dealers' small stocks were cleaned out and wholesalers could not keep up with demand. It was all good for the refrigerated air cooler business too. Dehumidifiers do not have much market in dry heat areas of the West. . . Essick Evaporative Air Coolers, made in Los Angeles, did well with a controlled cooling feature. Mitchell, RCA, G-E, Frigidaire, Vornado and others with unit room coolers have had good selling this season. All the fan companies too were cleared of inventory.

Breeze in

Phonographs, with and without radio, have come in for a lot of revived interest. Is it that radio and TV are so loaded with talk and politics that uncommercial music is a treat? Could be. Wilcox-Gay introduced a new line of tape and disc Recordios and phonographs at Chicago. . . Magnavox has re-emphasized a line of radio-phonographs with AM and FM. . . . RCA Victor has a newly developed three-speed phonograph turntable that does away with inserts on 45-rpm records. . . Mitchell Mfg. Co. added a new three-speed portable phonograph to its radio and TV line. . . . and Webster-Chicago has a new Webcor Diskchanger, three new phonographs including a midget Fonograf lightweight.

Roll own music

Incredible as it seems, J. P. Burger & Associates of 1913 Columbus Road, Cleveland, claims to have an electric cabinet into which you hang up clothes, add a little water and a chemical, close the doors, turn on the electricity and after awhile the garments can be taken out all free of wrinkles, trousers creased, etc.

A valet

Electrolux cleaners, which has never nationally advertised in its 27 years, will do so now but not change its door-to-door distribution.

Departure

No sleep with TV

They've gone about as far as they can go in television tube size with a few more 27-in. models shown at the shows. For as Columnist Delaplane says, if they make TV sets any bigger they had better put mattresses on them for there won't be any place left to sleep in a house.

TV flashes

But the TV business is as oscillating as ever. You'd think the national political conventions were being staged especially for its benefit. At least every make of set is capitalizing with all stops pulled out, even to throwing in as extras phonograph turntables or canned hams. (Any similarity to candidates or politicians is unintentional.) Even Walkie-talkies will be used at the conventions to cover the conventions. . . Meanwhile color came back to add to the confusion when NPA lifted the wraps on materials if it does not detract from defense production. So far nobody has done more than issue statements about color, most of these being that an electronic system is what is needed. Eidophor, a Swiss system, has been taken over by 20th-Century-Fox for theater use. . . So far FCC has issued no new licenses even to Denver or Portland, the first two on its list. Colorado Springs and Pueblo, though down further on the list, hope to have a joint station first on Cheyenne Mountain because no one is contesting the channel they seek. Denver is getting ready for TV with service training classes, Better Business Bureau standards on advertising, stocks on hand to sell. . . In Portland convention viewing was being prepared for over a closed circuit from KING-TV in Seattle to Meier & Frank Co. store and four radio stations, with distributors loaning sets. As in Denver, contested channels may delay permits from FCC.

..and news shorts

New models in TV are too numerous to list, each make having announced several in 16, 17, 20, 21 and some 24 and 27 in. tube sizes. All now offer some means of converting to UHF when and if. Prices on 16 and 17-in. sets are well under $200 in some cases. . . Columbia offers a model for building in to a home to serve a modern home trend. Used its Columbia Square Studio A in Los Angeles to hold a dealer preview of its 1953 line. . . Packard-Bell started work on a $300,000 addition to its Los Angeles headquarters and plant. . . It is rumored Sears-Roebuck is buying into Mercury TV in a deal to market its sets.

Sports? Maybe

The sportscast outlook for the fall is still dim. However, Hoffman will sponsor junior college football games from Sept. 20-Nov. 28. Meanwhile, it is reported that National Collegiate Athletic Assn. has a plan to keep big college teams from getting all the TV gravy by limiting each college to one telecast a season and only one gamecast on a given date, and the sponsors have to take the full package.

Musical chairs

Among major distributor changes recently are: Boyd Distributing Co. in Denver took over the Norge line from McCollom-Law, which took over Westinghouse line from Tom Savage & Sons. Boyd gave up Deepfreeze, which has not been announced to anyone else at press time, and ABC laundry equipment, which went to Allied Appliance, and Whitewater electric water heaters. Boyd now has Norge, Thermador, Astro and Domestic sewing machines. McCollom-Law also gave up Hallicrafter. Allied Distributors, besides ABC, has Admiral, formerly handled by Marcus. . . In Los Angeles the big news was that Herbert H. Horn gave up Admiral, which is setting up another of its direct factory branches in that city. . . Walter J. Epstein, who formerly handled Hoffman in San Francisco, has started a new firm and is northern California distributor for Raytheon's Belmont line of TV and radio. Epstein is associated with R. J. McNeely and J. H. Clippinger, formerly of Hoffman and Admiral, respectively. . . Arthur C. Maryon Co. has been made Kaye-Halbert distributor for the San Francisco Bay area.

Youngstown Kitchens opened a beautiful new factory display room on the ground floor of Western Merchandise Mart, San Francisco, showing every item in the line in 10 permanent kitchens. Morris D. Durham, Western division manager also makes headquarters there.

Kitchen splendor

Other distributor news--Standard Supply Co. of Salt Lake City is distributor for the entire Universal Major Electric Appliance Co. line for Utah, parts of Nevada, Oregon, southern Idaho and Wyoming. . . Landers, Frary & Clark, the original Universal, has made Graybar its distributor in Los Angeles for its home cleaning line, replacing Thomas Distributing Co. The latter has given up its Los Angeles house and is now headquartered in San Diego at 1002 W. Juniper St., handling Estate, Hallicrafters and Monitor washers. . . Gregnall Co. is now distributor in San Francisco Mart for Natalie Kalmus TV and Sub Zero freezers. . . W. F. Distributing Co. in Denver is a new Quicfrez distributor. . . O. B. Wilt announces Gough Industries in Los Angeles as distributor for Monitor Aerator washers, Thomas Distributing Co. of Prestomat, the large washer, and J. J. Kerwin Corp. in Los Angeles and that Washing Machine Parts Co. is Los Angeles and San Diego service supplier. . . Leo J. Meyberg Co. will handle the Perfection Stove Co. products in California and western Nevada. . . Jack Moulthrop, president of Radio Television Supply Co., seems to have bought out the interest of Sues, Young & Brown in the firm. . . Century Distributing Co. is now Coolerator distributor in the Los Angeles area. . . Gordon E. Wilkins-Ironers Inc. is distributing Hamilton dryers in northern California and western Nevada. . . Kaemper & Barrett of San Francisco and Berkeley are distributors for Fowler's new electric clothes dryer, made in Portland. . . Estate ranges are now handled in Los Angeles by James J. Kerwin Co. . . Packard-Bell reappointed E. Ken Rogers its distributor in the Portland-Seattle area. He had retired due to illness two years ago. And Jack Booth, formerly of Proctor, is now Packard-Bell distributor in the San Pedro-Wilmington area.

Shifting sands

People made this news: T. Carroll Deamer was named sales manager of the wholesale division of National Sewing Machine Co. He was formerly with Free. And J. J. Moffatt, vp and gsm of Free announced that Donald S. Bibbero is now district manager in northern California. . . Walter E. Stickel came home to the West he left about five years ago as national sales manager of DuMont to become the same thing now for Hoffman Radio Corp. in Los Angeles. He was originally with Meyberg. . . Karl Ostler has been named Oakland branch manager of Westinghouse Electric Supply Co. by Charles Matthews, district manager.

Personal changes

Chung Kun Ai, 87-year-old Chinese immigrant who founded and runs the City Mill Co. Ltd. of Hawaii, expressed his gratitude to the people of the Islands in a huge party to 1,000 guests, all over 70 years of age, at Ala Moana park, June 11, an extraordinary event.

Beautiful gesture

Howard Merrill & Sons-TV Theater in South Gate, Calif., won the national first prize in Freedom Fair window display contest held by Westinghouse Electric Corp.--a Cadillac automobile. The similar department store contest second prize was won by Bon Marche of Seattle.

Winners

Chet Worthington has been appointed Northwestern regional sales manager for Whirlpool Corp. with headquarters in Portland. He is a former Sears and earlier G-E man. Peter N. Prussing was made Southwestern regional sales manager for Arizona, California, New Mexico and part of Texas. He was formerly with Graybar in Los Angeles, before that with Universal. He succeeds Robert P. Lewis who opened his own company, Whirlpool Northwestern, as distributor in Seattle.

In the whirl

In launching a light conditioning exhibit Bill Huckins feels that like charity—

Lighting Begins at Home

So the portable exhibit with lectures is making the rounds of divisions to tell employees, dealers and public the story

With a full scale model light conditioned room built in sections for portability, the Utah Power & Light Co. is making a concentrated effort to restore home lighting to its proper importance. And it is carrying that program into every one of its districts so that its own personnel, dealers and their salespeople as well as the public can be aroused to an appreciation of how a home can be lighted with today's available lamps and fixtures yet give full play to interior decoration trends.

As stated by W. A. Huckins, general sales manager, the purpose is this: (1) To demonstrate to customers the value and importance of adequate and correct home lighting. (2) To help dealers sell lighting fixtures and profitable lamps that give good light for seeing tasks. (3) To demonstrate the new light sources and their use for home comfort and beauty. (4) To give customers the recipe booklet, *See Your Home in a New Light,* which can be used in the home or store as a guide to purchasing and placing of lighting equipment.

The living-dining room, with furnishings, is an exact copy of that in the General Electric Lighting Institute at Nela Park. Made to be taken down and assembled in the company's offices or in auditoriums and club houses, it is planned to use it throughout the company territory. The room is being scheduled for one month in each division of both Utah Power & Light and Western Colorado Power Co. After the first tour it will be rescheduled for as many showings in as many places as possible. The equipment is all moved by van.

In each showing dealers are invited to cooperate by having displays of certified or recommended lamps and fixtures, both in the same auditorium and in their stores. Tags to identify the equipment are furnished them as well as copies of the recipe booklet. A set of recipe cards goes along with the room to be used in the auditorium or in display windows to advertise the showings.

As the room is set up in each division all the employees of the region are invited to bring their families in to a preview showing and demonstration. As each of the company's 10 home economists has been trained in presenting the light conditioning story the local economist gives the lecture in each division. It takes 40 minutes for the complete script.

After the employees, dealers and their employees are given the program and urged to stock and display the kind of lighting equipment that is demonstrated, to tag it for identification, and to sell it from the information they gather in the meeting; after the industry is thus prepared—power company people to talk and advocate good lighting, dealers to sell it—then a series of public showings are advertised and put on. Club groups, church social groups, school students in afternoon classes and adults at night are shown and told the story of recipes for home lighting. Old fixtures common to many homes are used for contrast.

The Salt Lake City division first saw the room in June, Ogden is to have it in July, the other divisions in rotation. It will also be shown at fairs and county and state expositions.

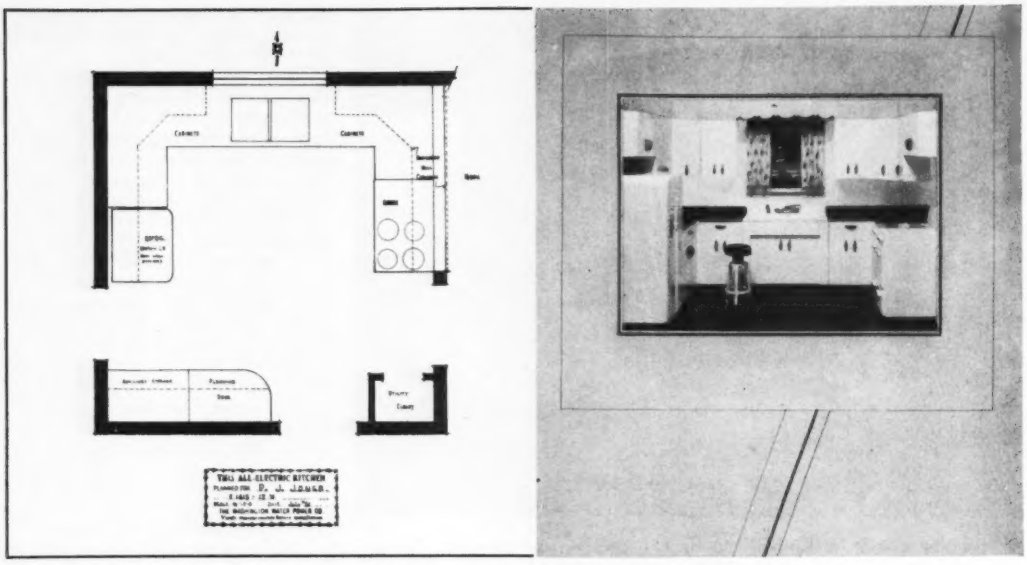
"We've been giving lots of help these past few years on appliances," said Huckins, "but nobody was doing anything on home lighting. We will still give all the help we can on appliances but we are going to do something about lighting too. It has been neglected too long."

Soap Sessions

Soaps, detergents and bleaches were thoroughly explored at a special conference on detergents sponsored by the Puget Sound Chapter of the Electrical Women's Round-table, the University school of home economics. The program was arranged by Edith Rauch. Nancy Jaeger Haugland is chairman of the group.

The first day and a half was devoted to talks and discussions by detergent representatives; the last half day to a general discussion on all the questions raised, presided over by Dr. Lingenfelder, chemistry professor at the University. Soap speakers included John Wood, Calgon; Jean Robinson, White King Soap; Max Gurvich, Launder Ease; Nell Lordan, Tide; Joseph Larson, All; W. A. Moss, Chlorox; Elaine Norden, Snowybleach; Josephine Rasmussen, Funsoap.

A similar workshop session was held in Portland June 5-7, sponsored by Portland General Electric Co. and Oregon State, held one-half day in each distributor of appliances auditorium. All county extension agents were invited. A chapter of the Round Table is being considered there.



Floor plan and colored photo of miniature model showing how kitchen will look, presented the customer who requests it from WWP

Kitchen Plan Service Keeps Them Sold

What became of the kitchen planning that many of the utility companies used to offer customers? In many companies, it is still being done. In others this service, like direct merchandising, was abandoned and left to the dealers, a few of whom really do a good job. But it is still an important aid to selling the electric living idea, whether it is done by the dealer or the power company or both.

A long record of kitchen planning is held by Washington Water Power Co. It is one of the services still being offered and accepted gladly by those who are either building a new home or remodeling just an old kitchen. The department doing it has been moved upstairs but those who seek this service are finding it there, where Harold U. Wright has his drawing board—and recently Mrs. Ruth Hilby, an engineer too, has been added to assist and to draw adequate wiring layouts on plans submitted to the sales department.

There have been various improvements in the methods used, Wright says. Photos of a scale-model kitchen are furnished the client but the most successful idea was to use Plexiglass to simulate walls. It serves to give a freshness to the pictures because some light diffuses through these walls from the rear and the photo requires less from the front, eliminating harsh shadows. This provides a more natural picture from the miniature model.

Along with the lighting and wiring Wright provides a more or less consultory service in color and decoration that has been very helpful in many cases. This is particularly useful when the question of light and color arises with respect to fluorescent. Sometimes this service takes them into other parts of the home than the kitchen but it all aims at customer satisfaction.

Requests for talks on kitchen planning and decoration also come to them. Some have been given to the university women at both Moscow, Idaho, and Pullman, Wash., and to townspeople in connection with the McCall's national kitchen planning contest. More people are reached with the message in this way.

Other activities include model homes, of which there have been promoted an average of four a year. In these the best possible arrangements are shown.

Requests for a plan are made on two forms, one with a rough dimensional sketch of the kitchen area. The finished brochure, pictured here, is delivered to the customer. It also contains several sheets of information relative to materials, lighting fixtures, etc.

Acceptance has been extremely good. It is generally agreed that it is one of the best residential services offered and thank you notes bear this out. In a three-year period more than 1,200 plans have been delivered. On occasion Wright has made detailed drawings of china closets or other features not associated with the kitchen directly.

While no official survey of results has been made, consideration was given to the inclusion of a card with each folder offering the customer a Reddy Kilowatt gift if mailed on completion of the job. By spot check by the residential field men it appears that 80 to 90% of the plans are installed shortly after delivery. Even if this were not so, the company feels that a plan for every home on the system would be a worth-while goal. It would plant the idea of the all-electric kitchen. Then any work that the customer does would be in line with a basic plan. When it is done is not so important as to give kitchen satisfaction, and such planning, Wright feels, assures this.

Table Settings Aid Housewares

More than 10,000 people visited the table setting contest sponsored by the Pacific Gas and Electric Co., the San Francisco unit of the Northern California Electrical Bureau, and *McCalls* magazine in San Francisco May 12-24.

Titled "After the Party is Over," the show was given to promote interest in electrical appliances. Table setting displays were flanked by a complete display of equipment from 13 manufacturers or distributors. Among the major appliances, which were demonstrated as aids to easy entertaining, were automatic laundry equipment, dishwashers and disposers.

McCalls magazine co-sponsored table setting festivals in six cities after its May issue devoted eight pages to a similar story. Six of the pages showed table settings by distinguished women and two pages were devoted to electrical appliances. San Francisco was the only city west of the Mississippi to be chosen for the show.

In San Francisco, 56 women's clubs competed in the contest. During the first or qualifying week, two winners were chosen daily by a group of three judges—one from the major downtown stores, one from a television or radio station, and one from the newspapers. The first week's winners competed during the second week for the grand prize, which went to the San Francisco Council of Camp Fire Girls. The award was the club's choice of a washer, ironer, dryer or dishwasher; a $50 bond; and a Gorham silver bowl. Second prize was a portable dishwasher or garbage disposal unit and a $25 bond. Daily awards were traffic appliances such as automatic toasters, percolators, waffle irons.

People attending the show were given tickets on a door prize which was the winner's choice of a washer, ironer, dryer or dishwasher. Careful inspection of appliances on display was insured by asking each ticket holder to specify which appliance and which brand he preferred if he should win.

PG and E felt that the promotion was especially valuable from a public relations viewpoint. Both contestants and audience consisted mostly of women of above-average income, who like to entertain and like to buy appliances.

Local appliance dealers and some department stores cooperated with the program by displaying "After the Party" equipment.

Results of the table setting contest, held on the appliance display floors of the Pacific Gas and Electric Co., 447 Sutter St., San Francisco, from May 12 to 24, show that a total of 12,800 persons viewed the displays. Of these 11,160 took registration coupons at the door, and 8,788 deposited stubs giving their names and addresses and the type of appliance they most wanted to win.

Consumer preference, tallied from these stubs, follows: washing machines, 4,443; dishwashers, 1,649; ironing machines, 1,598; clothes dryers, 989; and others, 109.

The committee in charge was headed by Art Maryon as chairman, and included Fenn Wilson, Henry Hornstein, C. P. McCarthy and Ellis Larkins. Mrs. Cleo Filsinger, home economist for the Pacific Gas and Electric Co., was coordinator of club activities. Harry A. Lee, San Francisco division sales manager, PG and E, was in charge of utility participation.

Back in Business

With the long wanted prospect of more available power when its Yale project is completed the Pacific Power & Light Co. is beginning to re-energize its commercial department. The first step is to learn just what the situation is with its customers as to use of electricity since the days when it was very active in load building. During the past several shortage years it has added customers but lost employees in its once "sales" department. Many of the statistical functions it used to perform to keep abreast of the electrical appliance market and learn its saturation had to be eliminated in the long "dry" spell.

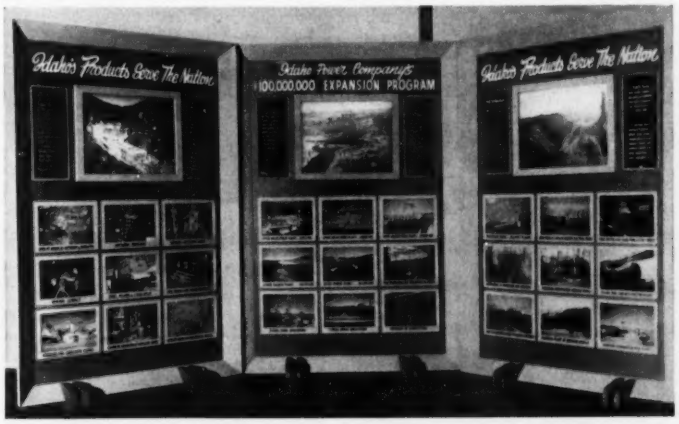
Now ten men have been added to the staff at Yakima to begin a residential customer survey and to find out where the company stands. Analyses of bills over the past six months are being made. Then door-to-door customer survey of appliances and where possible of the desire for more appliances will follow.

These field men are supplied with two cards, one white, one blue. The blue card is for the customer. It explains the rates to the customer and lists the last six months' consumption. The reverse side tells the approximate number of kilowatt-hours used by a list of electrical appliances in common use.

On the white card the representative lists the same billing information. In spaces provided he checks appliances in use, those that may be purchased and if possible, when. Any complaints received are noted and disposition of them is checked as adjustments are made.

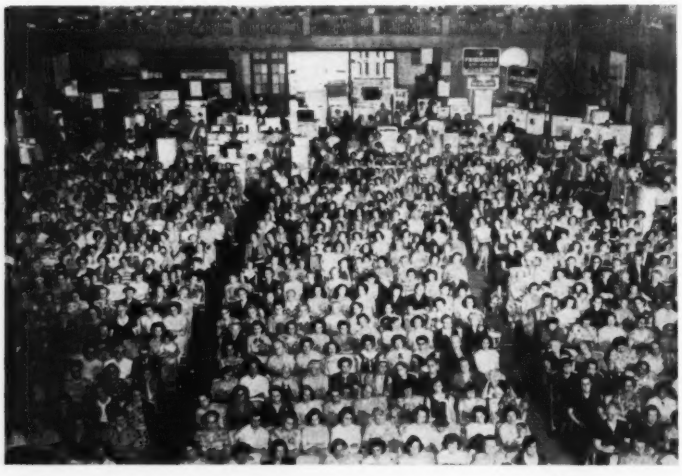
This information will later be taken to dealer meetings planned by D. B. Leonard to begin next year, not as prospect cards but to show the potential sales and to stimulate dealer activity to get this business.

After the residential surveys similar ones may be started on commercial and industrial accounts. It is hoped by the company to recondition and reactivate its entire commercial program when power is available, and to be ready for that time by this foreknowledge of conditions.



Idaho Power Co. has been selling the state's products to Eastern business groups with color transparencies mounted on portable panels — of which these three are typical

Sacramento's Electrical and Home Show, attended by 6,874 people in three-day showing —



and Maryville's Better Meals Cooking School and Home Show prove that there really is —

Business in Show Business

Proving our News Letter paragraph that shows were not drawing customers as well as expected to be wrong, reports from two shows held in the Sacramento valley in May have been making us take it all back. The first was the three-day, two-night Better Meals Cooking School and Home Show, in Marysville, May 13-15 at which more than 1,300 people jammed the hall for every session. On May 23-25 the Sacramento Valley Electrical League held its first Electrical Home Show.

The Marysville show was sponsored by the Yuba-Sutter Gas & Electric Appliance Assn. of which L. F. Putman is president. Said Putman, "We credit our success to two factors: (1) We offered an outstanding program of interest to a broad cross-section of the population in the area and (2) the system used in publicizing the event was a result getter."

The *Appeal Democrat*, a local newspaper, co-sponsored the cooking school and Pacific Gas and Electric Co. ran a large ad with a 3-col. 4-in. or larger picture of a person from each store that gave a prize having a retail value of $50 or more. These pictures began appearing in the paper April 11 and increased in volume until 22 had been run prior to opening day. Then the pictures were run again in a huge edition devoted to the school and show. "The impact was terrific," says Putman. Dealers who exhibited echoed his sentiments.

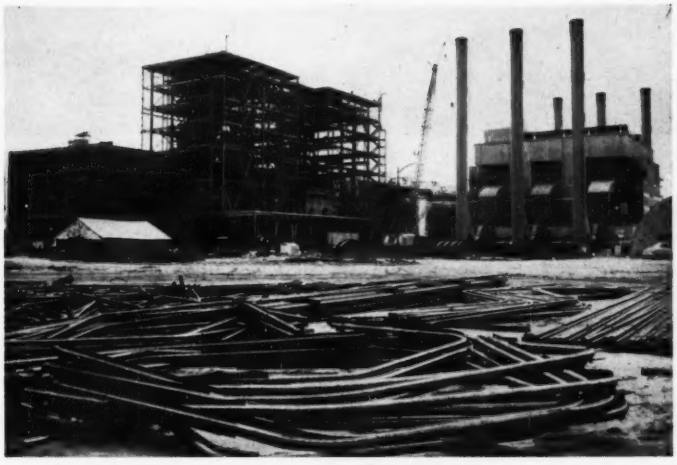
Mrs. Maxine Gentis, PG and E home economist, Mrs. Ann Cook, International Harvester home economist, Clara Sherburn, Hotpoint home economist, and Elena Zelayeta, a blind woman specialist in Mexican and Spanish recipes, and R. M. Lawrence, who demonstrated barbecuing for men, were featured cooking school attractions.

Sacramento Show

Using the big Sacramento municipal auditorium, the Sacramento Valley Electric League had exhibits from 50 dealers in 59 large booths and as special features had the Ward Harris Edison Exhibit of original products of Thomas A. Edison; a miniature railroad by a 13-year-old boy, Jack Robinson; an activated display from McClellan Air Force Base, a 4-H Club booth and a California Highway Patrol safety display. Six entertainment programs, seven home economics demonstrations and door prizes brought attendance of 1,341 on Friday, 2,226 on Saturday and 2,907 on Sunday, about half of which were on half-price courtesy tickets given them by dealers. Admission price was 50c, half the attendance paying full price. Revenue exceeded budget estimates.

Home economists participating were: Christine Dent, Westinghouse, who demonstrated electric ranges; Clara Sherburne, Hotpoint, freezers; Hazel Dederman, General Electric, washer and dryer; Margaret Hyland, Frigidaire, range; Mary Kelly, Philco, range; Barbara Rae, Crosley, freezers.

A poll taken during the show by two members of the show committee sampled opinions of both exhibitors and visitors. The response was predominently favorable. A few visitors suggested more air conditioning of the auditorium. Exhibitor reaction was enthusiastic. Other results of the survey are being made known to the local dealers as a guide to the next show and also to indicate prospect interest in particular appliances.



For ability and desire to bring adequate electric power to its area through a billion-dollar construction program, largest in electric industry history . . .

PG and E Wins Coffin Award

The electric industry's top honor, the Charles A. Coffin Award, went to Pacific Gas and Electric Co. for outstanding achievement in 1951.

PG and E's desire and ability to bring adequate electric power to its area through a billion-dollar construction program, largest in electrical industry history, was responsible for the selection. Begun after World War II, the program was three-quarters complete in 1951 and had virtually doubled generating capacity.

James B. Black, PG and E president, received the award from Philip D. Reed, chairman of the board of General Electric Co., at the Edison Electric Institute's 20th annual convention in Cleveland last month. George M. Gadsby, EEI president, was in charge of the special ceremony. A committee considered 57 companies nominated for the award. Final judges were Dr. James R. Killian, MIT president, C. W. Kellogg, past president of EEI, and Gadsby.

In announcing the winner, Gadsby said PG and E was selected on the basis of its ability to meet skyrocketing demands for electric power and imminent threat of uneconomic competition from a federal power agency.

"The company has served its area so well, has so dramatically demonstrated its ability and willingness to meet all the needs for electric power, and has so effectively brought these facts before the people and the Congress, that the threat of bureaucratic competition has been nullified," he said.

In 1951, he pointed out, the USBR shelved its plans for building a government transmission system largely duplicating that of PG and E, and signed two long-term contracts with the company providing for company marketing of power generated by the bureau's Central Valley Project.

Reading from the citation that accompanied the award, Gadsby said that "during the decade prior to 1951, the USBR, while engaged in constructing and beginning the operation of the multimillion-dollar Central Valley Project essentially intended by Congress for irrigation and flood control, exerted every resource at its disposal in a prolonged attempt to establish a $100 million government power transmission system in the service area of the electric company.

"With candor, patience, courtesy, persistence and persuasive skill," the citation continued, "the company proved to Congress and to the people that such a tax-free duplicating government transmission system was undesirable and wholly unnecessary in the public interest.

"The cooperative and skillful acts which brought to all of the people of the area and to the taxpayers of the nation the greatest economic advantage in putting to use the electricity generated as a by-product of a major land reclamation project" were judged as being "of inestimable value" in the "preservation of local government and the American system of free enterprise and in furthering the progress of the electric industry."

The Coffin Award was established 30 years ago by the Charles A. Coffin Foundation, in the name of the first president of General Electric Co. It consists of a gold medal for the winning company and $1,000 for the employees' benefit fund.

Philip D. Reed, G-E board chairman, presents the Coffin Award to James B. Black

ELECTRICAL WEST

Merited Recognition

THE electrical industry's most coveted honor — the Coffin Award — has again been won by a Far Western utility. Pacific Gas and Electric Co. received this well-merited recognition for its 1951 achievements set forth in the citation in this language:

"For successfully and adequately meeting the electric needs of one of the nation's most rapidly expanding regions with a privately financed construction program which is the largest ever undertaken in the utility industry; and at the same time resolving its problems of government competition with a program of cooperation which is in the best interest of customers, the public and the taxpayers."

ELECTRICAL WEST joins the whole industry here in the Far West in acclaiming and saluting PG and E, its officials and its 18,000 loyal workers. The recognition and the accomplishment too are in keeping with the tradition and public spiritedness of this great utility organization.

Who Should Be Investigated?

WASHINGTON State's Senator Magnuson and ten other socialistically minded senators have asked for another Federal Trade Commission "investigation into the propaganda activities" of the private electric utilities "against public power projects" and to inquire into the amounts spent "directly or indirectly to influence the election of state and federal officials," attempts to influence teaching in schools and to "induce" churches, clubs and other groups to oppose public ownership of power. This is to be the Senator Norris inspired, one-sided, loaded inquiry of 1928-35 all over again. Obviously it is an attempt to scare private business into ceasing to defend itself so that public ownership can take over with less effort.

The investigation that *should* be made, in the interests of protecting America against a gradual and insidious change from free enterprise to nationalized industry, and socialism instead of freedom, is just the opposite of what Senator Magnuson proposes. And perhaps the senator himself and his group are the ones who should be investigated first. Certainly their propaganda efforts on behalf of the socialization of the power industry, especially in the Northwest, have been more reprehensible to a large portion of the American public. They are supposed to represent these people equally with those of the other point of view. The propaganda they make bears investigation as to motives and source.

The way in which the tax money of all the people has been spent to hire scores of publicity agents for the ambitious government agencies trying to build up a public power trust and to absorb and destroy those now in the business, is certainly due for a real investigation. This form of "boring from within" is just as dangerous to the American system as anything the Communists can do—and the aim is the same, to make the state supreme and the people its dependents.

When a business can no longer spend its own money to defend itself from those who, with money taken from the public against its will, propose to take over that business for their own aggrandizement, then it surely is high time that a true investigation should be conducted into what on earth is going on and why.

Come All Ye Salesmen

THERE was both a veiled warning to management and a sign of hope for sales people running through many of the addresses at the PCEA Coronado convention. The end of the "no-selling necessary" honeymoon may be over and a period of rough, tough, competitive salesmanship could be just ahead. Ponder for a moment over these few cogent statements from some of the speakers:

"I suggest . . . that the almost forgotten techniques of salesmanship be taken out of

EDITORIAL VIEWS

mothballs and more liberal appropriations of time and money be made for the sales department including more funds for advertising."—Retiring EEI President George M. Gadsby.

"Are we creating desires and demands for our products and services through an ever-mindful adherence to the principle to sell, sell, sell? With humility I submit that with only a few notable exceptions we as an industry are way behind our competition."—General Electric's E. W. Theleen.

"Long range sales planning is much more difficult than long range facilities planning."—Westinghouse's J. M. McKibbin.

"Management must assume the role of salesman if it is to heal the schism that exists between management and labor and the company and the public."—General Petroleum's E. S. Hochuli.

"People must be told about new developments and then persuaded to try them. Call it education, selling, sales promotion, or what you will, it boils down to the same thing—that progress comes about almost in proportion to our skill in communicating ideas."—General Electric's W. V. O'Brien.

Little can be added to the sentiments of these industry leaders. What they foresee is the end of the buyers' market. What they say is that it is time to prepare now for the hard selling that lies ahead.

You Can Say That Again

WHEN the people of a region turn a major function, such as power supply, over to the federal government they are in for a rough ride on the Washington merry-go-round. Under such circumstances instead of having power expansion geared to the demands of the region, it is tied to the attitudes of the President and of Congress and subject to the interplay of all kinds of extraneous factors and political pressures. Among other things involved are party, sectional, and ideological differences—changing policies as to pump-priming, defense spending and budget slashing — inflationary or deflationary trends—and, of course, logrolling and red tape . . . . . By piecing together the tactical maneuvers, the expansion schemes and the contract and other practices of the federal government, a clear pattern seems to be shaping up along the lines that it not only desires to control the generation and transmission of power in the Pacific Northwest, but the end use as well. If such a policy persists it could eventually mean that local private and public utilities would be autonomous in name only, and the federal government would be dictating the rates, the quality of service, the location, kind and size of industry, and what not. In other words, a federal "octopus" would be running the whole show—calling all the shots and, power-wise and otherwise, the people and the economy of the region would be regimented. All of this brings into sharp focus the broad question of policy—is not the public interest best served by limiting the federal government's activity in the power field to generation in connection with multipurpose projects? It would seem as though it is high time that the whole picture be re-examined for the purpose of determining how this region can have adequate electric power with a minimum of federal control and a maximum of Home Rule.
—Frank McLaughlin, president, Puget Sound Power & Light Co., Seattle, Washington.

Sherwin Gadsby

Theleen Turnbull

Comer Kellems

PCEA Hears That Salesmanship Has Two Jobs

Speakers Tell 850 Delegates to Coronado Convention That Saving America and Building Electrical Industry's Future Are Big Tasks for Years Ahead

An industry with its hat off to the past and its coat off for the future took stock of itself at Coronado June 11-13. Some 850 delegates to the thirty-fifth annual convention of the Pacific Coast Electrical Assn. heard speaker after speaker develop three significant points: (1) The force that would destroy America as a great nation of freedom and initiative must be stopped now. (2) The electrical industry must again muster its sales forces to sell its products and services and to tell its story. (3) The electrical industry by tradition and past achievement can contribute to (1) and can accomplish (2).

From retiring President E. D. Sherwin's opening observation that "no one should ever sell the electrical industry short" to President-elect D. D. Smalley's closing admonition that "alert, articulate, effective electrical industry teamwork will keep America whole" the meeting was notable. The program rivaled if it did not exceed in interest that at the Cleveland EEI meeting, according to those who attended both.

High points on the program judging from comment were Vivien Kellems' dramatic revelations of her single-handed fight with bureaucracy and Banker Carl Taylor's stirring appeal to patriotism and courage to keep America American. However, there were cogent, provocative and useful observations in the remarks of Westinghouse's J. M McKibben, *Electrical World's* Ralph H. Flynn and General Electric's John J. Huether and C. W. Theleen as a study of the condensations appearing in other pages of this issue will reveal. The same applies to Textileman Hugh Comer's and EEI President George M. Gadsby's comments, as well as to those of Lawyer Allan Smith and Oilman E. S. Hochuli.

The 1952 PCEA convention also marked a break with tradition. The program consisted entirely of general sessions. Section meetings were dispensed with entirely. Instead section chairmen presented brief reports on the highly successful individual section sessions held during the fall and spring. Alf Hansen, General Electric, reporting for the Engineering and Operating Section, suggested that in the future two days be alloted to his group so that more time will be available for working discussions. H. C. Rice, Southern California Edison, proposed that the Business Development Section broaden its activities in keeping with the problems in selling. Dexter Stoner, Coast Counties Gas & Electric, reported on the highly successful joint sessions of the PCEA Administrative Services Section and a similar group from the Pacific Coast Gas Assn.

Reporting on PCEA membership

OURS IS THE KEY INDUSTRY

We all hold the conviction that American industry today cannot afford to have any weakness. Industry in general—and our industry in particular—is beset these days with snide innuendoes, irresponsible heckling and bold frontal attacks which have just one objective—destruction . . . It is vital to the nation that we be strong on the industrial front. Ours is the key industry . . . The electric business—with all its segments combined into one whole industry—is the keystone of our whole great free enterprise system. It is the keystone because were we not free, no industry could be free . . . The electric industry—our businesses and our jobs—must be our rallying point. We must achieve greater teamwork to preserve it as the vibrant, progressive force it is. The best way to keep it alive is to keep it whole. And there is no more effective way any of us can make our contribution toward keeping America whole.—D. D. Smalley, president-elect, PCEA.

Field McKibbin

Taylor Maytham

Huether Flynn

Managing Director V. W. Hartley said that an all-time record has been reached. PCEA now has 291 company and 3,630 individual members including 30 company and 130 individual members in the Hawaiian Section.

The convention was not confined exclusively to business. A highly enjoyable entertainment program was conducted for the ladies under the direction of H. A. Cordes, General Electric. The annual cocktail party and banquet were outstanding. D. P. Cady, Maydwell & Hartzell, and L. M. Guibara, U. S. Rubber, headed the committees responsible. The golf tournament was administered by R. T. Redfield, Graybar.

Greater detail on many of the speeches will be found in the pages that follow.

Get Our Industry's Salesmanship Out of Mothballs

Says C. W. Theleen, Manager of Sales, General Electric Co.*

What about today's market? What must be done to sell under today's conditions? What about the future and its opportunities? As one salesman to a group of salesmen with mutual interests I would like to make my pitch on this basic premise: "There's a great future in the electric appliance industry."

Prophecies of minor doom for the major appliance industry have been made public by supposedly informed people in recent weeks. To these I take vigorous exception. Back in 1875 the United States Commissioner of the Interior, Zachary Chandler, said, "New materials and new inventions have now transformed our society into its final phase, for scientific inventions can take us only a little way further."

Off and on over the years there have been many predictions that the economy has reached a saturation level. Yet, after every setback, production has moved to higher levels. The financiers, the managers and the workers in this country have been able to convert an abundance of raw materials into useful forms of products at a faster rate than the population has grown so that there has been a steady rise in our standard of living. Each time the foreseers of doom have been proven wrong—as wrong as Commissioner Chandler was back in 1875 when he consigned our social state, our economy, to a static state.

In 1951 our total national income was $275.8 billion. Disposable income is estimated at $22.6 billion. It is reported by sources of authority that personal expenditures amounted to $205.5 billion or 87.4%. The gap between disposable income and personal expenditures is about $17.1 billion going into personal savings which have now reached an all-time high.

This discussion concerns just one aspect—one facet of this staggering multibillion dollar economy: The freedom to buy and sell. For just as we are free to select a location, engage in business, build our plants, stock our merchandise, promote and sell our products and services so, too, our customers are free to decide what, where and when they will buy. The things that people buy generally fall into two categories: necessities and unnecessities. Necessities are, of course, food, clothing and shelter, and the unnecessities are everything else.

A very large part of our total production (perhaps 40%) goes into goods and services (unnecessities) that consumers can pass up without any great inconvenience. This marginal forty, the 40% that's left, comprises the area of discretionary buying. This is the area in which we in the appliance business must compete for our share of the consumer's dollar. This is the area where the consumer is free—free to anticipate, free to select, free to switch from one unnecessity to another.

Isn't it a thrill to live in a country so rich, so strong, so healthy that you can say about 40% of our production goes into goods and services that consumers can pass up without any severe inconvenience? And isn't it a thrill to be a salesman and have this opportunity? The difference between great prosperity and depression in the United States depends to a great extent upon salesmen. Our economic health depends upon persuading the American consuming public to keep on buying those things that, no matter how desirable they may be, the consuming public is under no heavy pressure of necessity to buy.

This means, in the ultimate analysis, that as our standard of living increases, our national prosperity is placed more and more in the hands of salesmen—the hands of men who take our goods, our services to market.

How effectively are we as an industry getting our sales story across today? Does our sales strategy measure up against the fellow across the street—our competition? Are we creating desires, demands for our products and services through an ever-mindful adherence to the principle to sell?

With humility and with recognition of the fact that it is dangerous to generalize I submit that with only a few notable exceptions we as an industry are not—that is, if tear sheets from 45 metropolitan newspapers on two succeeding Sundays are any cri-

*An Abstract

teria. Ad after ad screams about prices, terms, trade-ins and premiums. What are we apologizing for? On any basis of evaluation major appliances at regular list prices reflect less inflation and offer better values than almost any necessity or unnecessity in the market place. Between 1939 and today the average small car has increased in price 140%, an average five-room house 120%, a man's all-wool suit 64% and even round steak 202%.

And what about major appliances? Let's take a look at refrigerators. The average price of all manufacturers of refrigerators between 1939 and 1951 increased only 46.2%. Ranges increased only 62% and the average of all major appliances only about 58%. This is a powerful sales story and we have not been telling it.

People will respond with their buying dollars to new ideas. They want things they haven't had before. They want things that are different and better. The American economy never could support itself in the past several decades on the basis of just replacement of worn-out things. America runs on new ideas. Right now there are plenty of new and different appliance ideas to make the consumers part with enough of their money. America wants values and our industry has them.

Let's Get Government Out of Business

Says Vivien Kellems,
President, Kellems Co.

Inflation can be curbed, taxes reduced and the public debt partially liquidated if government will sell all of the businesses it is in back to private industry Vivien Kellems, president of the Kellems Co., Stonington, Conn., told the PCEA convention. Miss Kellems also recounted her experiences with the Internal Revenue Bureau and the courts in her fight against the withholding tax.

"Here's a solution for helping to pay the public debt," she said. "Get the federal government out of every business it has no business being in and have it attend to the business of governing the people. The government should take every business it is now in, including the power business, and sell it to private industry and let private industry run it so it will be prosperous, pay taxes and kick out thousands of little bureaucrats. Government could take the proceeds and apply them to the reduction of the public debt."

She urged the power companies to take advantage of the possibilities of television in improving their public relations. "It should be easy on TV," she declared, "to show the little woman in the home how the stoppage of electricity supply could starve a big city in a few days."

Miss Kellems also commented that every business that today feels the breath of the socializer on its back should have rallied around the electrical industry 19 years ago when it was selected as the primary target for socialization.

She gave a vivid description of her futile experiences in endeavoring to get indicted so as to test the constitutionality of the withholding tax law. Her fight, which started in 1948, has been described blow by blow in her book, *Toil, Taxes and Trouble*, (Dutton).

"The only real freedom in the world," she said, "is the right for man to live, work, accumulate and pass on to posterity whatever he wishes. That is the basic right to private property. It is the freedom to work and to keep the fruits of one's labor; it is the right to earn a profit coupled with the chance to suffer a loss. The income tax amendment is the greatest obstacle to the fulfillment of that right. Its passage destroyed the constitutional protection the citizen has against the ruthless tax gatherer. Its full impact was not even recognized when one of its sponsors in Congress said that it was necessary because the federal government must find money, not for the needs of government, but for the wants of government."

She told how she broke the law; how she was never indicted; how penalties were assessed against her and her bank account seized without due process of law. She also described the function of a test case and showed the iniquity of the Congressional legal procedure of "incorporation by reference."

"There is no room in this country today for a nonpolitical individual or a nonpolitical organization," she concluded. "The person or organization that does not engage actively in politics deserves the fate it is sure to suffer."

Stoner Rice

Churchill Hansen

An Electrical Eldorado Lies Ahead

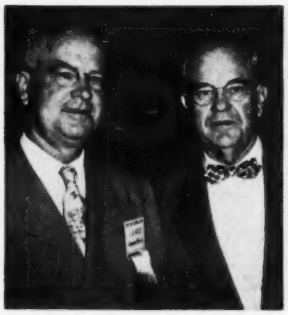
Says W. V. O'Brien,*
Commercial Vice-president,
General Electric Co.

The electrical Eldorado on the horizon is neither myth nor mirage. Unlike the fanciful Indian tales that fired the imaginations of the early Western explorers, there is a well-charted route to our Eldorado. I should like to chart the route with you through the valid instrument of business forecasting.

Indeed, there are a great many qualifications applied to this forecast. After all, there is the dark cloud of Mr. Stalin overshadowing our horizon and, to be realistic explorers, we must reckon with it. On the other hand, with each passing day, as America builds her strength and finds the courage to stand firm, there is less likelihood that Russia will engage in a direct, sudden, all-out attack against the free world.

If this assumption is correct, our marketing research people see the following pattern of national business

*Abstracted from an address presented by J. J. Huether.



Hicks Smalley

Reilly Smith

movements during the coming decade:

First of all, there is the fundamental fact that the population is going to rise to at least 171 million by 1960, about a 10% increase. Simply supplying jobs, homes, goods and services for this additional population is a challenging opportunity. But these people aren't going to be satisfied with today's standards, and neither will we be.

On a rather conservative basis, we believe that the gross national product will rise not 10% but 20% between 1951 and 1960. And this is in terms of 1951 dollars. Now, how is America going to increase her physical output by 20% when the population is increasing by only 10%? Not by lengthening the work week. And not by putting a larger percentage of the population in the labor force, either. As a matter of fact, with young people staying in school longer, and more and more people retiring on pensions, the labor force probably will increase by only 4%.

Now, in order to have a gross national product of $390 billion in 1960, the yearly output per employed person must rise from $5,000 to $5,800 —about a 16% increase in individual productivity.

This additional output per employee would increase the industrial production index 18% between 1951 and 1960. But to do this—and here's the key fact, based on actual experience —to increase industrial productivity this much and give the larger population electrical service, will require 70% more kilowatt-hours than were produced in 1951. This is because today increased productivity comes about primarily through the application of more electric power to do the job.

In more familiar terms, we see power sales rising from 318 billion kwh in 1951 to 633 billion by 1960. And installed capacity, at nameplate rating, should rise from 75 million kw to 145 million.

These are realistic forecasts, based on experience and the best evaluation we can give to future conditions. They were not prepared for publicity purposes, but for business purposes. And subject to periodic modifications, we are basing our plans and our investments on them.

But there is absolutely no assurance that things will turn out as forecast. As always, in human affairs, the question of success and failure will be determined not by statistical probability but by that intangible, unpredictable miracle, the human spirit.

As an industry, we will bring about our high destiny, or we will miserably fail, according to the courage and initiative we bring to the job. Men are like turtles. In order to move forward, we simply must stick our necks out.

So much of the expanding future, the nation's electrical Eldorado, that has been forecast will depend on the way we persuade homes, factories, and communities to which we sell electric equipment or kilowatt-hours to make maximum efficient use of electricity.

The greatest hoax ever perpetrated on the American people was not carried out by Benedict Arnold, Tokyo Rose, or Alger Hiss, but by a respected New England man of letters. Our American thinking has been warped and twisted by Emerson's oft-quoted mousetrap theory. You all know what I mean: "If a man makes a better mousetrap, though he build his house in the woods, the world will beat a path to his door." It's a lofty sentiment, dear to the hearts of all engineers. There's only one thing wrong with it — it simply is not so.

People must be told about new developments and then persuaded to try them. Call it education, selling, sales promotion, or what you will, it boils down to the same thing—that progress comes about almost in proportion to our skill in communicating ideas. That is the challenge facing each of us, if the goals outlined for 1960 are to be realized.

Management Has a Big Selling Job

Says E. S. Hochuli, Manager, Industrial Relations, General Petroleum Co.

The salesmanship that management must use to heal the schism or rift between management and labor was discussed by E. S. Hochuli. There are four questions that arise when anyone has to persuade himself to do anything, he said. These are: (1) Shall I bother to listen? (2) What can this guy do for me? (3) Is it worth while and can he deliver? (4) Why can't I put it off? The ability to answer those four questions is the ability of a salesman, said Hochuli.

"We are the ones that are on trial," he said, "and for that very reason in healing the schism that we face in our companies, management must assume the initiative — management must therefore assume the role of a salesman. If management is to be the salesman, it is its job to answer those four questions in the minds of the opposition.

"The basic method of answering those questions is the ability and willingness to bring benefits to people. It assumes that you come before your prospect with a good deal. But it requires one more thing. If there are any two qualities of a salesman that are important, I would wrap them up as tolerance and sincerity," said Hochuli.

"The schism that exists between management and labor, and the schism that exists between the company and the public, will not be healed and management cannot answer those questions," he said, "unless it approaches its task with tolerance and sincerity. The tools that we have to offer those other groups can be subject to great suspicion. The only difficulty is not what is in a plan, but what is deep in the hearts of those who offer it.

"In our efforts to sell what we have as management and as companies, we should be very certain that there is no chance to detect insincerity, that what we have to say is what we mean," Hochuli concluded.

Cady Guibara

Ross McFadden

Sargent Tracy

Our Industry Is Not Afraid of Federal Encroachment

Says Allan A. Smith, Partner, Laing, Gray & Smith*

Our customers expect us to get for them a fair share of the power that comes from government dams so long as the subsidies keep it less costly than we can produce it ourselves. They like our efficiency, our know-how, and—perhaps best of all—our fighting qualities. We have not opposed existing projects or those now under construction, but have cooperated with other groups to keep construction on schedule. Adaptability is to me one of the most striking characteristics of the free enterprise system, and by its application to the conditions existing in our area we have continued in business. I think we are going to remain in business.

We are not afraid. Pacific Power & Light Co. is building the Yale project on the Lewis River at a cost of more than $26 million to provide approximately 120,000 kw of power. The Washington Water Power Co. is building Cabinet Gorge on Clark Fork at a cost of $41 million, providing 230,000 kw. Portland General Electric will build Pelton on the Deschutes, the city of Tacoma has a project on the Cowlitz, and Seattle is completing one on the Skagit. These nonfederal agencies will add in the next three years approximately 1.5 million kw in capacity, and the group will spend in the next six years for generation and distribution $625,368,930. Since 1941, through 1957, the expenditures will aggregate a total of $1,031,260,799. We are strengthening our position that we may be better able to preserve in that area private free enterprise in the power field. I am confident we will be successful.

A recent report by Bonneville shows that in 1951 it provided 60.2% of the power used in the area. How far it may go, I venture no prophecy. However, if the whole of the Columbia watershed can be pre-empted for federal development, and nonfederal projects stopped or reduced to a minor role, the power generated by the government and marketed through a single agency will be a monopoly of the first magnitude and will dominate the economy of the region. That wouldn't be good for anybody.

TVA and the projects in the Northwest are the first of the great efforts to increase the role of the government in the business of generating and selling power. It is here that you find encroachment best exemplified, and can glimpse how far it is to be extended if permitted to go unchecked. Of significance is the manner in which both were started: TVA from the remains of a war facility—deliberately idled until there was a favorable climate — and the Northwest by executive directives. In neither case was there the deliberation —I speak in a parliamentary sense—that should precede so drastic a change in policy. But it can't be said that it was by accident either. The manner in which these projects had their beginning, the gradual movement towards a set goal, presage a plan, a program.

The Southwest area has not been spared. In the Central Valley project, with its Shasta Dam, you have had similar problems. The proposed network of transmission lines — some actually built against the express direction of Congress—the drive for steam plants, and the opposition to the construction of the Kings River project by private enterprise—these are of a pattern to what has happened in the Tennessee Valley and in the Pacific Northwest. Now it is proposed that we be tied together by one great federal transmission grid. The government doesn't want nonfederal construction of the Roanoke project in the East, the Cowlitz project in Washington, the Pelton project in Oregon—and what a drive is on to prevent the Idaho Power Co. from building five plants on the Snake! We must not overlook the efforts of the government to stop private development at Niagara Falls.

Sometimes it is one tenacle of the octopus choking the proposal, sometimes it is another, but always it is there, generally centering in the Department of the Interior. Court proceedings are now started to stop several of the projects mentioned by the Department of the Interior, or in which it has a sympathetic interest if not actually a guiding hand. The Southeastern Power Administration, the Southwestern Power Administration, the latter creatures of the Interior Department under the Flood Control Act of 1944, the Bureau of Reclamation, the Bonneville Power Administration, the Department of the Interior itself—for all practical purposes blanketing the nation, every one an aggressive promoter of more federal activity in the business of generating and selling electric power. While in some instances the generation is more supplementary than competitive, generally it may be said that it is intended to be and is in fact competitive. Recently, the secretary conceded that to be the case. This is what he said in a brief filed in U.S. court in Washington:

"The interest of the Secretary of the Interior is that of a competitor of VEPCO (Virginia Electric and Power Co.) in the sale of power in the Roan-

* An abstract.

Scott Goodwin Jr.

Quinton Courtright

Dillin Hartley

oke River area in Virginia and North Carolina . . . The record is replete with testimony showing that there is competition between the Secretary of the Interior and VEPCO, and in our main brief we have referred to facts of public record illustrating that the competition for the sale of Buggs Island power is very keen, although this unit has not yet been completed."

This is in complete harmony with everything that the federal government has done in the last 20 years, but so far as I know it is the first time that anyone has admitted that the federal government considers itself, not a helpmate or a partner, but a competitor. If my own experience can be considered as a criterion, the government of the United States, as a competitor, will use every means at its command to secure the field for itself.

The growth of federal encroachment is well illustrated by the number of companies affected by it. In 1931 only 1% of the companies had federal power in their area, but in 1951 it had grown to 27%. It's reaching everywhere, and none is free from its dangers!

The encroachment program is substantial. As of June 30 this year—excluding Nebraska—the government has spent $4,258,000,000 in the power business. It has 8 million kw in service, 8½ under construction, and 10 authorized. An additional 41 million kw has been approved and proposed. The bureaucrats tell you all will be built and, consistently with everything they have done, by the government alone. To what extent is all this in keeping with our traditions? Or does it in fact mark a turning aside from the system that has wrought the material marvel of all time—the marvelous teamwork of labor, management and investors? This combination has produced a wealth of goods and aids to human existence, adequately distributed and possessed, without precedence in history or parallel anywhere. We, the electric industries, have played an important part in the contribution to this unparalleled era of production. The motivation of every enemy we have is the envy of our possessions, developed and constructed by ourselves. If any other system could equal our productive capacity or meet our standard of living, there wouldn't be so many lies spread about us to alienate our friends, mislead our people, and ultimately destroy our nation.

Self-Reliance and Efficiency Can Still Save America

Says Hugh M. Comer, Allis-Chalmers Director

Using the mechanization of cotton as his text, Hugh M. Comer, chairman of the board of Avondale Mills, Sylacauga, Ala., showed how the American spirit of self-reliance has built the nation to its present position of greatness. Mechanization means efficiency; efficiency means profits; profits assure wealth; wealth creates jobs. Inefficiency creates poverty in one fell swoop and poverty is a mess," Comer told the convention.

Cheap water, coupled with non-erosive flatland is putting the West in the forefront as a cotton producing area, Comer declared. This makes possible complete and successful mechanization. He told how agro-industry is working to produce a uniform seed and a uniform cotton plant which will be best adapted to mechanized agriculture. New fertilizers and new insecticides together with chemical weed control also contribute to the assured future security of cotton as an important and economical competitive fiber. All of these things should bring about reduction of 70% in the cost of producing cotton fiber in the next decade, he predicted.

Comer, who is also a director of Allis-Chalmers Mfg. Co., offered as a text for all those who labor for progress and development in any industry, an excerpt from an advertisement of the John Hancock Insurance Co. "I want to introduce you to a wonderful fellow, Old Stormalong," he said and quoted the following: "You don't hear much about Old Stormalong nowadays and that's a pity. Time was, any proper edycated seafaring man east o'Cuttyhunk could tell you all about him.

"This here Stormalong, he was a monstrous able deep-water man. What floated, he could sail. What swum, he could catch. What thundered and blowed he could out-thunder and out-blow. Nothing much ever got done at sea without Stormie had his big hand in it.

"You heered about Columbus? Stormie was his navigator. Heered about the Mayflower, Stormie rowed it across. Heered about John Paul Jones? 'Twas Stormie helped him start the U.S. Navy. Heered about sperm whales? Most as was caught Stormie caught. Sea sarpints? Stormie scared their eyeballs out.

"You heered about clipper ships? Stormie sailed them.

"One time he bumped into Central America in a fog and knocked a mite 'o land loose. That's the Panama Canal, mate.

"Stormie's still sailing and always will. Wherever you find Americans doing a job on land or sea, Stormie's there, working his good-natured miracles. For under oilskins and sea-

boots, he's the old familiar SPIRIT OF AMERICAN SELF-RELIANCE —the spirit of every man who steers a straight course in life, skipper of his fate, ready for any weather that may come."

There Is No Job That Is Too Big

Says George M. Gadsby, President, EEI

"Anyone who says that there is a job too big for this industry to undertake just isn't reading the papers—he doesn't know the facts." In those words George M. Gadsby, retiring president of EEI and president of Utah Power & Light Co., summed up the accomplishments of the electrical industry in fulfilling its responsibilities in today's arsenal economy.

"In spite of complaints and troubles, nowhere in the industry is there a sense of futility. Everywhere, everybody is rowing upstream. As an industry we are not going to fumble through, but we will win through with solid achievement."

Gadsby predicted that the high points in industry growth percentagewise probably occurred in 1951 and 1952. He cited two danger signals: (1) the huge increase in the productive capacity of industry generally and (2) the increasing rate at which Americans are being fed doctrines of hate and class distinction.

He declared that if the electrical industry is left to its own resources all of the power requirements of the U. S. can be met without government participation in the program. He stated that operating companies are cooperating to a greater degree today in setting up and running power pools and in building up capacity than would ever have been possible under the holding company regime. As examples he cited the five-company program of New York utilities for developing the power resources of Niagara Falls and the St. Lawrence; the five-company Paducah Plant for the AEC and the recent 15-company proposal for two 625,000-kw stations in Ohio for the AEC diffusion plant.

Here are some other pertinent observations Gadsby made:

On Financing the Expansion—"Borrowings are providing up to 60% of the capital requirements with stock sales and retained earnings, classified as equity money furnishing the remainder. Looking back it is fortunate that refunding operations which began some ten years ago were covered in a time of low-cost long-term funds. When we go to the market now, it is for new money which must come from current savings rather than reinvestment of funds derived from repayment of earlier obligations . . . One of the greatest tributes paid to our industry is the evidence of faith on the part of institutional investors in us and in the private enterprise system. This is even more pronounced in the market absorption of large amounts of equity securities."

On Adequacy of Rates—"It is all very well to talk about investor confidence but we must not overlook the indisputable fact that continued confidence must rest on a solid foundation of performance and earnings . . . We can see no new factors that by reducing over-all costs will offset the upward pressure of inflation and taxes. This leaves but one avenue open and that is to increase rates so as to produce a return that will attract money for the expansion program."

On Taking Salesmanship Out of Moth Balls—"Coupled with the consideration of rates is the need for intensified sales efforts to produce the revenues essential for support of the new capital invested in our properties. We can no longer postpone S-Day . . . We are now confronted with a somewhat unusual situation in that civilian consumer purchasing is declining while savings are increasing. Certainly all consumer wants have not been filled and it would appear that the reason must be a hold back on the part of people to buy the things they would like to have . . . The almost forgotten techniques of salesmanship should be taken out of moth balls and more liberal appropriations of time and money be made for the sales department including more funds for advertising."

On the Need for Understanding—"Perhaps the greatest need of our country today is mutual trust and understanding among every segment of our people as labeled Government, Labor, Capital, Management and the so-called 'General Public,' which after all is nothing but a combination of the other groups. If the ultimate impact on the American individual were the directing motive of each of these groups, we would have cooperation instead of strife, amity instead of ill will, constructive correction of wrongs and poor practices instead of evil poisoning of the minds of one class against another. Great as this country is and tremendous as is its production, our standard of living and outpouring of goods and services of all kinds would be augmented to a miraculous degree if the Golden Rule and the Eleventh Commandment became the criteria of our policies and actions."

For What Kind of An America Will Americans Fight

Asks Carl Taylor, President, Waukesha State Bank

"What kind of an America would you like to live in tomorrow? What kind of an America would you like to leave to your children the day after tomorrow? I would like to impress that question upon your mind and even to lay it upon your hearts with enough emphasis that you would be compelled again to answer to your own conscience the kind of America you would like tomorrow." Thus led off Carl Taylor in a stirring and hard-hitting luncheon address. "Do you want a kind of America," he continued, "in which individuals shall have their own responsibiilty and their own free right, or do you want a kind of America in which the state shall take over the responsibilities of the citizens and we shall become the quiescent subjects of an overpowering state as most of the peoples of the earth are tending to do at this time?"

He said each one as an individual must think this out for himself. "America's material success," he said, "was because America said to every Cyrus McCormick, every Eli Whitney, every Edison, who was born in this land, you are free to do with your life what you want to do with it, and we will reward you proportionally as you do good for other people." Speaking of the plight in which this country finds itself, he said, "If you have a political allegiance, forget it, because this has cut through all that we have normally thought of as party politics. Do you realize," he admonished, "that 80% of the surplus earnings of all the people of this land go to less than 100 people who determine how and where they will be spent, or stolen as their consciences may dictate.

"If you don't think your freedom is gone, you make up your mind to do something with your income that the government does not think you ought to do, and you will learn that you live in a socialistic state in which

the government is nearly everything and you just do what you are told." Taylor had an official copy of the Communist Manifesto and read from the section on "How to Communize America Through Its Business Life."

He took its ten points step by step and showed how we have adopted the program laid down for conquering America. The first thing listed in the manifesto was to establish a heavy progressive income tax; the second, establish a heavy progressive inheritance tax; the third, centralize credit in the hands of the state; the fourth, charter state corporations (like TVA and other Valley Authorities, he said), and so on down the line.

"The Communists know that they can never take over this country man by man," he said, "but that they have to get all the power in the hands of a few, and then they just have to take over a few and they have got the job done. We have adopted approximately 80% of the program of the Communist party," declared Taylor. "You did it, don't look around at anybody else. Don't look at any corporation, any party or any group—look at yourself because you are the guy who did it. You are a director in this corporation called America. Add up what you have done to try to educate yourself with facts and persuasion so that you could tell the other fellow.

"The men who work for you look to you for economic guidance. If you have the responsibility for their economic guidance, you have the full responsibility for their guidance in the affairs of patriotism. If you worked one-tenth as hard to teach them what is wrong with communism, new dealism, and state socialism (all of which are the same thing, a few gangsters running us all), if you worked one-tenth as hard to tell them the truth as you do to tell them where to put the generator and how to keep the power flowing, we never would have lost the freedom that we have lost in this wonderful land of ours.

"I came only to ask one thing," said Taylor. "What kind of an America do you want to live in tomorrow, what kind of an America do you want to leave to your children and your children's children? . . . Do you realize that we are losing it? What are *you* personally willing to do *yourself* to help preserve this greatest heritage God's children have ever known in all of human history?

The numerous requests for copies of the tape recording made of the speech indicated the profound impression made upon the gathering by Taylor.

Electrical Trend Will Be Upward for Next Ten Years

Says Ralph H. Flynn, Publisher, ELECTRICAL WORLD*

The answer to the question "After mobilization what?" is this: there isn't going to be any "after mobilization" for many, many years. To the extent that we shall be spending at least $40 billion a year for defense works and equipment, we will not be through with mobilization by 1956. To the extent that an arsenal economy of substantial size will be superimposed on top of civilian economy, we will never again see the pre-Korea days. I believe it will be at least 10 years before defense spending drops as low as $25 billion annually.

For at least 10 years now, from 1941 to the present, we have been enjoying a feverish prosperity. These ten years have followed no business-cycle pattern; neither will the next ten. This is so primarily because we gradually have been learning—because we now are awakening to the fact that government spending really can stop prolonged mass unemployment.

Deficit Spending Wrong

The Roosevelt deficit spending policies were not successful. The whole method of attack was wrong, as most business men knew and stated back in the early thirties—wrong, that is, if pump priming *was* the objective. Roosevelt's method obviously was successful if, instead of building a stable economy, he sought to build a stable political machine.

But—and here's another point on which the majority of the economists with whom we work, as well as conservative yet realistic businessmen, seem to agree—World War II and the Korea incident proved that if spending is done through business channels, if we have true pump priming instead of a masked dole, deficit spending will work. That fact is important to remember, because it means that deficit spending will become an economic tool of whatever administration is in power in Washington. And the arsenal economy already mentioned—those billions more easily sold to the public because they are labeled "defense"—becomes a very important handle for the deficit spending tool. The very practical question faced by you and other businessmen today is whether private industry or the government will take over the spending job.

Based on these premises here are our predictions for the years just ahead. We believe that the general level of business will rise during the last half of 1952 and thus sustain a very high level of general business activity for the year as a whole.

Setback in 1953

But we see a setback coming next year—1953. This was practically guaranteed, we believe, by the decision of the Wage Stabilization Board in the steel case. And it doesn't matter whether the strike is a long or a short one, whether the steel companies get the price relief they want, or something less. Our reasoning is this: the decision to allow wages to go up strikes at 1953 capital expenditures. And the maintenance of a relatively high degree of such expenditures is an essential ingredient of a relatively high level of business generally. Regardless of cause and effect, the general level of prosperity and the general level of capital expenditures are economic Siamese twins.

The steel decision raises business costs and creates the near certainty of a squeeze on business profits. This, in turn, reduces both the money available for, and the incentive to go ahead with, the purchases of new capital equipment. In recent years, business profits have provided most of the money for the purchase of new industrial plant and equipment. Thus, a squeeze on profits operates directly as a squeeze on the funds available for the purchase of such equipment. This is perhaps the most neglected or abused economic fact in the USA today—certainly by the Treasury Department.

The degree of slump in 1953 depends on how well business recognizes this as a challenge. There are lots of people in this country and, of course, far more in other countries, who hope private industry fails and that the government takes over the spending powers forever after.

We believe the job will be done so that necessary correction will be small so that the decline from 1951's industrial production level of 220 will be less than 10% of the low point in

*An Abstract

Industry leaders who will constitute board of directors of PCEA for the coming year. Front: Courtright, Tenney, Goodwin, Tracy, Ernst, Smalley, Quinton, Hicks, Pengilly. Back: Turnbull, Borda, Sargent, Pollard, Scott, Sherwin, Hartley, Moody, and Maytham

1955—still higher than pre-Korea. And beginning in 1956, we should be on our way again.

Since there is a good correlation between industrial use of electrical energy and the index of industrial production, we can chart industrial energy sales most easily. We do not foresee a drop in industrial energy sales, even during 1953, '54 and '55, because of the increased use in industrial processes. And if industry really starts to modernize—which is almost another way of saying "use more electricity"—if the capital goods manufacturers put the heat on selling the way appliance manufacturers evidently are determined to do, there won't be any flat place in the curve. We foresee industrial sales at 169 billion kwh in '52, 173 billion in both '53 and '54, a climb of a billion to 174 in '55 and, reflecting the upswing in industrial production which we forecast in 1956, a rise to 186 billion in that year. There are also going to be 12 to 15 billion kwh in 1954, and 24 billion in '55 and thereafter, for atomic energy.

Last year, residential and rural sales were up 10%. We are forecasting a gradual decrease to 7% annually by 1954; that, coupled with an increase in customers from 40 million in 1951 to 47 million in 1956, raises sales to 145 billion kwh in 1956.

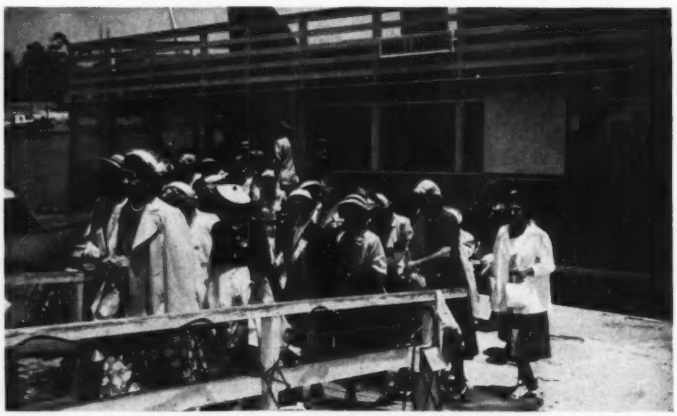
During the past 10 years, commercial sales grew 7.2% on the average. Last year the increase in use per customer was a remarkable 11.2%. We've predicted a settling down to the 10-year average by 1954.

Total this all and it is a very cheery picture, with a gain every year of about 30 billion kwh. But here's an even more heartening forecast. The mix that makes up this total will be changing in your favor. Last year 49% of sales were industrial, and only 26% residential and rural. By 1956, industrial sales will account for less than 40% while the more profitable residential-rural portion will be up to 31. You will be selling higher percentage of good return kilowatt-hours, with the resultant favorable effects on revenues and net.

Thus far I've talked the national picture. Now let's talk about the Pacific Coast.

The area certainly should have no difficulty getting new customers. Whereas the census bureau prediction of population growth for the U. S. is 15% in this decade, here are the comparable figures for some Western states: California, 33%; Nevada and Arizona, each just under 30%; Oregon, 25%; and Washington, just under 20%.

Residential sales in the Pacific Coast states were 11,270 million kwh in '51. We expect them to go up 13.1% in '52, 12.8% in '53, 13.2% in '54 and 12.2% in '55. This is based on a residential customer increase of 140,000 in each year, 1952 through 1955, and an increased use per customer of roughly 9%. This increase in use is higher than the national average, both percentagewise and in kilowatt-hours. In the five-year period, our forecast shows the Pacific Coast gaining 25.5% in residential customers, 2% better than the national average, and gaining 41% in average annual residential use, 3% better than the nation. On commercial and industrial, we see you gaining more slowly. We see only a 7.9% increase in sales to these customers this year, as against 8.9% nationally. This drops down to 4.7% in '53, no gain in '54, and 2% in '55—a five-year gain of 15% against a na-



What is a convention without the ladies! Here they disembark after a ride around bay

Sherwin Smalley

tional gain of 21% in this division.

On rural and other sales, the West comes into its own again. The 10% gain of last year will be matched by a 10% gain in 1952. Then you go up to 11.2% gain in '53, 11.1% in '54 and 11.7% in '55. This is a 52% gain in the five-year period, against a national increase of only 38%.

The total, then, of all sales, and not including atomic energy requirements, gives a 9.4% increase this year, 7.8% next year, down to 5% in 1954, back up to 6.5% in 1955—or a five-year increase in total sales of 31%. That's not bad, you know, but it's less than one-third of the increase you will get in the 10-year period. You're going to be adding load hell-bent-for-election between '55 and '60.

And like the utility industry elsewhere, you can have the happy thought that your residential sales are going from the present 24% of the total to 30% by 1955. That should give you the net to satisfy cautious investors and pay for the new plant you will be adding.

Two Win Honors

Unexpected honor and attention were achieved by two PCEA convention delegates. Frank Bodine, Westinghouse, cashed in on his ignorance of Spanish at the Tia Juana jai allai games. Wishing to bet $2 on No. 7 in one round, by mistake he went to the quinela window where his request for "two on seven" brought him a combination ticket for Nos. 2 and 7. Both won. Payoff $35. Jerry K. Lewis, Allis-Chalmers, San Francisco, made a hole-in-one in the golf tournament.

PECA Officers

D. D. Smalley, vice-president in charge of operation, Pacific Gas and Electric Co., was elected to head the PCEA for the 1952-53 year at the annual meeting. Other officers elected include the following: vice-presidents Henry B. Sargent, president and general manager, Arizona Public Service Co.; L. S. Hicks, vice-president, Hawaiian Electric Co. Ltd.; Frank A. Tracy, president, Sierra Pacific Power Co.; H. F. Hartzell, president, Maydwell & Hartzell Inc.; R. D. Moody, district manager, Allis-Chalmers Mfg. Co. Re-elected as directors were: R. N. Dreiman, Coast Counties Gas & Electric Co.; H. F. Hartzell, Maydwell & Hartzell Inc.; L. A. Hicks, Hawaiian Electric Co. Ltd.; W. J. Maytham, Westinghouse Electric Corp.; J. H. Pengilly, Square D Co.; T. L. Rosenberg, T. L. Rosenberg Co.; H. B. Sargent, Arizona Public Service Co.; S. W. Scott, Graybar Electric Co. Inc.; F. A. Tracy, Sierra Pacific Power Co.; R. W. Turnbull, General Electric Co.; I. W. Borda, Okonite Co.

IES

Two new chapters of the Illuminating Engineering Society were to be chartered in the Rocky Mountain region during June. The first is a new chapter in Pueblo, whose charter was presented June 27. It is known as the Southern Colorado Chapter and has 24 members. C. D. Bell, Southern Colorado Power Co., is chairman; Dr. A. A. Sutton, optometrist, is vice-chairman; J. E. Parker, Southern Colorado Power, treasurer; and C. F. Balsick, secretary-treasurer. The board of managers includes J. D. Burwick, contractor of Colorado Springs; E. H. Pemberton, general sales manager, Southern Colorado Power; Les Johnson, formerly Sylvania, now Pueblo Electric Supply Co.; J. D. Akers, Colorado Springs manager of the American Electric Co.; Kenneth J. Stines, architect, Pueblo; and Bill Busch of Rocky Ford, a contractor. The new chapter was formed following a lighting course conducted by Southern Colorado Power Co. in Pueblo, which graduated 35 participants on June 17. This course started in January and ran through May with meetings every two weeks, and two additional special meetings. Attendance at the meetings came from Canon City, Rocky Ford, Colorado Springs and the Pueblo area.

The second IES chapter was to be chartered at Albuquerque, N. M., the following day. The list of officers has not been announced yet. A team from the Rocky Mountain section at Denver was to make the presentation of the charter at both meetings. Included on the team was G. B. Buck, II, and others from Denver.

Electric Club

John Nelson, assistant superintendent of Seattle City Light, who for the past year has served as vice-president of the Electric Club of Washington, has been elevated to the presidency of the statewide organization. He succeeds H. R. Loew of the General Electric apparatus department.

Other officers and trustees named include C. D. Casey, Casey Electric Co., first vice-president; Luther C. McIver, Puget Sound Power & Light Co., second vice-president; R. A. Church, Puget Sound Power & Light Co., renamed treasurer; and J. D. Gawne, City Light, renamed secretary.

Dr. E. C. Kilbourne, the dean of electrical men in Seattle, honorary member of the club, was named honorary president.

Howard E. Bayley, Industrial Electric Co., was elected trustee for the two-year term. Other trustees elected were G. L. Call, Graybar Electric Co., and A. W. Kessler, Westinghouse Electric Supply Corp.

Two former presidents of the Electric Club, John P. Lawton of Graybar, and Beverly Travis, an electrical engineer, and Charles Allison, a former secretary-treasurer, served on the nominating committee.

Wright Milne Johnson Clayton Howell

Labor-Management Meet in Dist. 8

When labor and management meet, what happens? Well, in the Rocky Mountain region they seem to get along fine, understand each other and listen to each other's problems with a view to helping solve them. That appeared to be the consensus expressed by all at the joint progress meeting of District 8 of both National Electrical Contractors Assn. and of the International Brotherhood of Electrical Workers, held at Colorado Springs, June 13-14. The IBEW delegates preceded the joint meeting with one of their own June 10-12.

Two respective national officers participated—Don Clayton, president of NECA, an electrical contractor from Birmingham, Ala., and J. Scott Milne, secretary of IBEW, Washington, D. C. The vice-presidents—Ralph E. Johnson (Sturgeon Electric Co., Denver) of NECA, and W. C. Wright (Pocatello) of IBEW, took turns presiding over the joint general sessions. Program and arrangements were handled by efficient committees headed by Don Larson, manager, Rocky Mountain Chapter, NECA, Denver; Simon Halle, chairman, Colorado Springs Section, NECA; and Dave Tinling, business manager, Local 113, IBEW.

Business Promotion Need

A business promotion session, with emphasis on the opportunities in lighting, was the most constructive feature of the two-day program, showing both employing contractors and representatives of the journeymen electricians their mutual stake and job opportunity in the selling of better lighting installations in homes, stores, offices, schools and factories.

A panel of outside speakers headed by Gaylord B. Buck, vice-president, Public Service Co. of Colorado, and including Nat Blumberg, Western district manager, Lightolier Inc., Los Angeles; Stan Newman, Westinghouse Electric Corp. lighting engineer; Ray Hankins, vice-president, Albert Sechrist Mfg. Co., Denver; and G. B. "Jim" Buck II, district lighting engineer, General Electric Co., Denver; with Dale Strohminger, president, Rocky Mountain Chapter, NECA, presiding, covered all phases of this subject in a practical, down-to-earth way.

G. B. Buck with characteristic eloquence sounded the keynote of this session. He told them, "We are all confronted with the same problems. You may each face different aspects of them. The major problem we all face in this industry is that of business promotion, namely that of creating a desire on the part of the public for the services we can offer. In that way we build up a business condition whereby we all benefit. But we should be unified in our approach to this job. And so I say to you, only when each man takes the responsibility and carries it through can we all reap these benefits. The thing rests with the individual. If we do, you'll find out your businesses will be better, your boss' business will be better, your customer's service will be better and you'll derive more from the business for you."

Buck sketched the outlines of a dramatic program his company is preparing, to do for the home lighting field what has already been done to make the Rocky Mountain region outstanding in commercial lighting, street lighting and school lighting. He promised a live show, a "three-

Robbins Woolley Rowe Simpson

Larson Tinling

Halle

dimensional show" that will tour the region to dramatize home lighting. With it a drive is to be made to get a number of builders to install and equip model homes with home light conditioning as a feature along with adequate wiring. He concluded by asking all in the industry to follow up on the lead the utility would set in this promotion program.

Nat Blumberg followed with practical suggestions on how to handle lighting fixture selling. He told how to interest the owner-builder by getting on the job early and going over with the owner room by room the lighting needs of the house. Instead of selling fixtures from the wiring, he pointed out, it should be the reverse —from the fixtures the wiring should be provided. Next he told how to interest speculative builders and then told how the replacement market could be sold for fixture modernization of old homes to go with new furnishings. (An article on this subject from Blumberg will detail his suggestions in a later issue.)

Stan Newman described the types, characteristics, advantages, limitations and applications of the various types of mercury vapor lamps now available to the trade. He reviewed the history and development of such lamps and listed the present types and their special fields of application. He ended by emphasizing the importance of standards in lighting equipment, telling what UL, RLM, ETL, and Fluorolier labels mean in setting standards.

Ray Hankins, after saying that there seemed to be enough metals available to assure ample supply of lighting fixtures, devoted his talk to how to sell a better quality of lighting and of equipment on the small commercial lighting job, the bread and butter business of the electrical contractor and his wiring journeymen. The time to come, he said, is not an easy one. Business is no longer coming in over the telephone. Contractors need to have other arguments than price. Competition is very keen and if price is the basis employed, when the job is done the margin has been so whittled away there is nothing left.

Keaton Hyer

Jim Buck Hankins G. B. Buck Strohminger

Hankins then gave contrasting examples. He said that if an ordinary job is "bought" in price competition, the resulting dissatisfaction and service trouble not only make the job unprofitable but lose the customer. Then he told how a job can be sold on the quality of the equipment and its ability to continue to do a trouble-free lighting service that brings repeat business. He warned that if quality is not sold and price alone is dominant, the commercial lighting business will suffer the same fate that the home lighting fixture business fell into.

Jim Buck, quipping that "it takes two bucks to do what one buck did years ago," closed the lighting session by reviewing new things in lighting fixture design he had observed at the recent Lighting Exposition in Cleveland and by demonstrating some of the new mercury lamps. He said the showing of new industrial fixtures was most impressive because of new industries coming to the Rocky Mountain area. New fixtures that direct some light upward to reduce the sharp contrast between fixture and ceiling areas and others with baffling to eliminate direct vision into the lamps; greater use of luminous ceiling techniques, proving popular because of gains in comfort despite higher original costs and some maintenance problems; increased use of 257-v circuiting for fluorescent lighting as a means of conserving copper and increasing efficiency, were among the new trends he noted. He also spoke of a trend to refer to 100-f-c installations as 100% lighting jobs as a way of popularizing such a high standard.

The Copper Situation

President Don Clayton of NECA climaxed a discussion of the association's affairs at the conclusion of the convention with some hard-boiled facts about copper. He said he had not found anyone particularly interested in copper until he suddenly could not get some. He had contacted everyone he could to try to learn something positive "because copper is a matter of life and death with our industry for it is the problem of electrical conductors." He spoke of conflicting opinions given to him and the variety of future promises heard.

"We cannot wait until 1955-56 for copper to provide the materials for our industry. We cannot wait until next year. We may be forced to wait for the actual metal, be it copper or aluminum, but we will certainly be most unhappy and doing everything we can to communicate this unhappiness to those responsible.

"Are we to be expected to use copper at the 'more realistic' price of 32c against 24c for aluminum when 45 lb of aluminum will carry the same amount of current as 100 lb of copper—approximately $10.80 worth of aluminum to replace $30 worth of copper? Of course, the larger aluminum would have more insulation (18.6%) and would require large lugs and larger raceways (11%) but it would also be less expensive to

handle and to pull into raceways, being less than half the weight of copper.

"It appears from the present information that the sensible approach to this problem is for the manufacturers to start producing conductors for which aluminum is most adaptable and for contractors to begin to train their organizations in the techniques of handling the connections properly. Smaller sizes of wire and cables should be made from copper as that is where the large number of tedious connections are to be made and apparently where aluminum is least adaptable."

Clayton also spoke of the amount of electrical business now going to others by default because contractors have been busy with easy-to-get business. He warned that business would not be so easy to get in the next few years. He also touched on the traveling contractor problem and said that chapters could not expect them to pay dues if they fought them and gave them no service. It was better to accept them as temporary members and to give them service. No chapter can keep a contractor from doing work in other areas than its home office area, he declared.

The Pension Program

J. Scott Milne, IBEW secretary, mingling the evangelism of his nature with his Scotch ancestry, concluded an inspirational message on the values of cooperation and understanding between contractors and the union with some frank talk about the joint pension benefit fund under which the NECA matches the amount paid into the fund by IBEW members. The requirement to pay the 4,500 electrical workers retired on pension at present is $4.52 a month per IBEW member. The union members pay $1.60 a month, having recently increased to that amount, and NECA matches this. It leaves 62c to be met from reserves, which, because the number of pensioners is increasing and they live longer, are being depleted. Milne asked the locals that have surplus funds to loan them to the pension fund at low interest so that they could be reinvested at higher interest and the difference go to the pension fund.

In the first part of his speech Milne set up the ideal of service to the public as paramount to the interests of either the union or the contractors. "If we can give the people that we serve as a common industry such service that they will say we have done a marvelous job then we will have succeeded." The journeyman who does a careless job, he said, is doing the greatest disservice to his union. When a union man goes on a job he should be considered a professional. He also told the union representatives that whenever they have an opportunity to sell they should do so. "Economic conditions can't continue as they have," he warned. "In the days of adversity we need to be together to see that jointly we protect this industry of ours."

Newman Blumberg

William Howell, assistant secretary-treasurer of the National Electrical Benefit Fund, had preceded Milne with a report on the statistics of the fund and its distribution. He told how the IBEW contributions have been increasing so that the NECA's collection of 1% of labor pay roll is now barely meeting the IBEW contribution and the reserve of $4,000,000 is being tapped, suggesting the possibility of a future increase in contractor's contribution rate. Efforts to get more contractors to contribute are also yielding more returns. He differentiated between the retirement benefits and the so-called welfare plans now being discussed.

Ralph Johnson, NECA vice-president, commented that it now takes a mathematical genius to figure a pay roll with all the percentages for various things demanded.

Public Relations

Matt Sherwood, Western regional director of NECA, followed with the importance to contractors and union of good public relations, the need to sell and deserve the high wage scales and quality standards that both advocate. That contractors are specialists and their wiremen are professionals, that their skills are high, need to be sold constantly. He then reviewed what NECA is doing to qualify contractors for such a status —the business promotion program, the research and education program, its statistical service, the forms for use in accounting and estimating. He also spoke of NECA's service in labor negotiations.

William Blackmar Jr., manager of the Montana Chapter, NECA, and assistant field representative, presented a report from George Roscoe, NECA director of public relations, in respect to the progress being made to have Congress pass a bill that would protect subcontractors against the bid shopping practices of the general contractors. In it he urged continued support from the home front to acquaint congressmen and senators with the need for such legislation. Roscoe also summarized the situation in Washington relative to lifting of credit and materials controls and the copper situation. Then he told what materials and kits are being prepared for contractors to develop more business in their local communities.

Edwin Mackey, himself a member of IBEW, U. S. Bureau of Apprenticeship Training, Denver, reciting figures of the volume of building in prospect, told how many more skilled craftsmen were needed and how far short of that number the present training program is operating. Although the joint apprenticeship boards of workers and employers are best in the electrical industry, in many regions little is being done. He also told how important it is to conduct skill improvement programs for journeymen, to acquaint them with new materials and methods. One way employers could help more, he urged, was in supervisory training for management personnel.

D. B. Hyer Jr., executive vice-president, Southern Colorado Power Co., Pueblo, gave these representatives of unions and contractors a clear and serious inside view of some of the financial problems faced by the electric utility companies to meet advancing costs and yet hold rates down. **Joe Nichols,** formerly business manager of utility Local 57 in Salt Lake City and on his way to Washington, D. C., as assistant to Milne, responded that if there were more speakers for utilities like Hyer, there would be better understanding. He also restated the IBEW position opposing further encroachment of the government in the electric utility field. He also asked that utilities show more appreciation to contractors and give more cooperation to them.

The convention was welcomed by Simon Halle, electrical contractor of Colorado Springs, who is president of the local division of the chapter

and a worker on many national committees. Responses and reports on the status of their areas were made by Robert Rowe, Great Falls, Mont., president of the Montana Chapter; A. R. Woolley, Pocatello, chairman of the Idaho division of the Utah-Idaho Chapter; W. P. Robbins, president of the Utah-Idaho Chapter, Salt Lake City, and C. H. Simpson, governor of the Rocky Mountain Chapter of Cheyenne.

IBEW Meetings

In the closed meetings of the IBEW prior to the joint meeting, W. C. Wright, vice-president, reports that two major topics predominated. First was the obtaining of better compliance with the pension benefit contributions, with instructions to local unions that the funds must be collected. The second was the threat to IBEW from other unions raiding the electrical industry, some in the AFL, some outside it, which could mean lost work for IBEW members and lost jurisdiction. Further organization activity was advocated. The balance of the time, Wright said, was devoted to discussing and settling of local conditions reported by representatives from the Rocky Mountain district, either in meetings or in caucuses.

Inspection Fees Being Sought

Fifty-five men of the electrical industry, meeting in Yakima on Saturday, May 3, for the purpose of discussing proposed electrical legislation, accomplished three definite objectives: (1) they named the organization the Washington State Electrical Council; (2) they elected officers; (3) they appointed committees.

Casually mentioned and cursorily discussed, with no attempt to force early action, were certain subjects that may, or may not be incorporated in a proposed bill to be submitted to the Washington State Legislature. These subjects which find favor with certain representative groups included: the examination and licensing of journeyman wiremen; an increase in the contractor's license fee; sales control.

A motion was carried recommending a simple permit fee bill to the legislative committee. However the president pointed out that the committee should not consider themselves bound by the motion; rather they should be guided by the discussion and submit a type of bill which, in their opinion, will accomplish the most desired purpose.

These proposals, it is understood, along with other proposals which assuredly will be made by segments and groups from the industry, will eventually be whipped into a semblance of shape, screened by the duly appointed legislative committee and later, before submission in a bill, will be considered by the members of the Washington State Electrical Council.

This meeting, originally scheduled to be held on May 3 and 4, was initially sparked by the Puget Sound Chapter, IAEI. The plan of a statewide get-together was proposed at an IAEI quarterly meeting held in Everett earlier in the year; later, at a conference in Seattle the plan fructified, and the Yakima meeting was agreed upon. At the Frye Hotel meeting in Seattle, John B. Majerus, executive secretary-manager of the Puget Sound Chapter, National Electrical Contractors Assn., was named temporary chairman and John Watts of the Seattle building department temporary secretary. These men arranged for the Yakima meeting.

In order to expedite matters and cut the conference to a one-day instead of two-day meeting, Majerus, assisted by Howard Meyers of Local 46, IBEW (who filled in in the absence of Watts) prepared and submitted a proposed slate of permanent organization committees; also a slate of officers asking that the delegates favorably consider the slate and/or make substitute proposals. The following were named:

Organization Committee — Roy Kistler, Pacific Tel. & Tel., chairman; committeemen: C. D. Casey, Casey Electric Co.; Ellis Van Atta, Pacific Power & Light Co.; C. S. Alger, Puget Sound Power & Light Co.; W. L. Gaffney, chief electrical inspector of Tacoma; Arthur Siegel, Selo Electric Co.; Sydney Coates, electrical contractor; Lacy M. Peoples, Washington State Assn. of PUDs; Al A. Bradley, electrical inspector; Tom Underwood, electrical contractor; Roy Crosby, Washington Water Power Co.; Robert Wilkinson, manager, NECA in Spokane; N. L. Bost, National Electric Products Corp.; and W. S. Gallant, IBEW of Everett.

Ways and Means Committee — T. Ralph Neilson, secretary-treasurer of the Electrical Contractors Society of Washington Inc., chairman; committeemen: Roy Crosby, Leon Hampton, electrical contractor, the third to be named.

Legislative Committee — T. M. Widrig, Trumbull Electric Mfg. Co., chairman; committeemen: Les Stewart, Maxwell's, Spokane; two more to be named.

Public Relations Committee — James Fletcher, General Cable Corp., chairman; three committeemen to be named.

Officers Named

C. D. Casey, contractor, Seattle, president; D. B. Adams, contractor, Spokane, vice-president; Roy Skill, Pacific Power & Light Co., Yakima, vice-president; L. M. Peoples, Washington State Assn. of PUDs, vice-president. President Casey will represent the northwestern section of the state, Adams will represent eastern Washington, Skill will represent central Washington and Peoples will represent the southeastern portion of the state. Dave M. Davis of Local 46, Seattle, was elected secretary-treasurer.

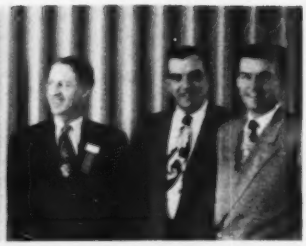
It was planned that each committee chairman (legislative, ways and means and public relations) would appoint three additional committeemen from his area to assist his respective committee. The chairman of the main committee will also serve as the chairman of the subcommittee.

Following the session, the Electrical Contractors Society sponsored a banquet at Gasperatti's in Union Gap, near Yakima, which was attended by a large number of the visiting delegates. T. Ralph Neilson, the society's secretary, presided.

● New president of the **Electrical Service League** of British Columbia is Howard N. Walters, British Columbia Electric Co. general sales manager.

Other officials are: W. W. Foster, British Columbia Power Commission, Victoria, vice-president; T. H. Crosby, H. J. Gough, W. C. Mainwaring, C. W. Nash, W. A. Williamson, C. E. Woolgar and A. McDonald, advisory council. Richard Hall, BCE general sales, is secretary-manager.

A. W. Peterson Jenkins Rhodes



Jones Regan Rowe

Angle Lindsey

Inspectors Berate the Derated Switch

Inspectors of the West, in a series of ten chapter meetings of the International Association of Electrical Inspectors, exchanged their views about the National Electrical Code for information regarding their national association with Robert Peterson, technical assistant secretary, IAEI, Chicago, during April and May. Beginning at Havre, Mont., April 18-19, Peterson's tour included meetings with the Montana Chapter, the Idaho Chapter at Pocatello, April 22, with Eastern Washington Chapter at Spokane, April 24, a combined Puget Sound and Oregon Chapter meeting at Longview, Wash., April 26, another joint meeting of Northern California, Central California and Sacramento Valley Chapters at Oakland, May 3, an Arizona Chapter meeting at Scottsdale, May 10, Southern California Chapter at Long Beach, May 14, and two chapter meetings on the same day, one of the Nevada Chapter at Las Vegas, May 19, and the Utah Chapter meeting at Salt Lake City the same date, and finally a Rocky Mountain Chapter meeting in Denver, May 22.

Although the program varied in details as to other speakers and somewhat as to portions of the code discussed, derating of fused switches at a percentage lower than that on the name plate drew lively discussion at practically all of the meetings.

Chris Klawa, Portland electrical inspector and president of the Northwestern Section, participated in the Idaho, Eastern Washington, Puget Sound and Oregon and Utah Chapter meetings and brought the views of the Oregon group on this and other controversial topics. A resolution was passed at several of the meetings opposing derating of fused switches and asking that they be designed to carry their rated load continuously.

Other resolutions passed at some of the meetings included: (1) Recommended use of three-pole grounding receptacle and caps on portable lamps. (2) Reduction of the four-foot limit on garages where explosion-proof equipment is required from 12 to 18 in. from the floor. (3) That Underwriters' adhere to Section 1120 of NE Code when checking and approving apparatus and requiring suitable name plates. (4) Opposition to derating of switches. (5) That manufacturers of meter sockets submit this equipment to Underwriters' Laboratories. (6) That NEMA or manufacturers be requested to set up standards for equipment rated over 5 kv and submit such equipment for UL examination and test. (7) That the last sentence of Section 3732 NE Code be made to read, "Cabinets and cutout boxes installed in wet location shall be of approved weatherproof type."

The Montana Chapter, of which M. J. Rhodes of Huntley is chairman, devoted much of its discussion to proposals for a state law in Montana. After a talk about the NECA by Robert Rowe, Great Falls contractor, a committee was set up in cooperation with the Montana Chapter of NECA to prepare a draft of the proposed state law for submission to the next legislature. Kenneth Savage, Trumbull Electric Mfg. Co., gave a talk on multibreakers, and other speakers on the program besides Robert Peterson included local businessmen. Len Regan, Montana Power Co., talked on modern lighting trends and James M. Simpson, Electric Motor Service, Great Falls, on motors and controls. Ralph Grant, Havre city inspector, told of the need for inspection and for the inspectors association.

Officers elected for the next year were Kenneth Jenkins of Sun River Electric Cooperative, Fairfield, Mont., chairman, and Claude F. Angle replaced Walter Lindsay of Havre, Mont., who is retiring. Angle is an electrical contractor at Ennis, Mont. Meetings were held in the Hill County Electric Cooperative, with Harold Ebaugh making local arrangements.

Idaho Chapter's meeting was condensed to one day, with Ralph Foley of Twin Falls as its chairman. The program was arranged for maximum discussion, with a minimum of speakers. Aside from Peterson, the only other speakers were Earl Haroldsen of Idaho Power Co., who gave an interesting talk on a proper installation of high-voltage underground cable. He stressed the importance of the splicing of cable and how they should be made with proper dielectric shield to prevent failure. W. A. Hopper, contractor of Boise and a member of the State Contractors' Board, reviewed the state law and the board's activities and the efforts to obtain changes in it to get permit fees for the employment of more inspectors. Progress has been made in a number of small cities to compensate the state for inspections made in their boundaries instead of employing inspectors of their own.

A. R. Woolley of Pocatello was general chairman of arrangements and J. Carl Baldridge presented a 1951 code book to the journeyman electrician holding License 1,000 at the banquet.

Eastern Washington Chapter's meeting was even shorter — just an evening session at Spokane Hotel. Peterson, as he did at all the meetings, reviewed national headquarters affairs, such as the new system of dues collec-

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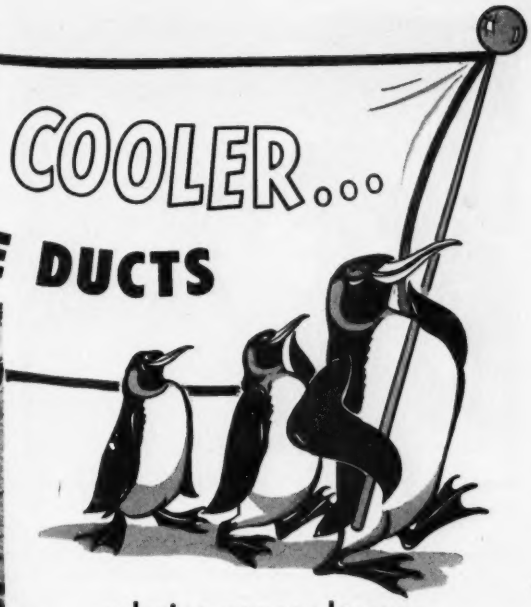

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Temp. Rise from Dielectric loss (C)	1.9	2.1
Allowable Rise for Copper loss (C)	59.1	58.9
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Nevada Chapter's banquet, officers and notables at head table

Lauren Christensen presiding, Robert Peterson explaining in Utah

tions, explaining the serial numbering of membership cards. He announced that several pamphlets published by IAEI were being revised and reissued and also that the safe cord publicity pieces for mailing or distribution to public groups were now obtainable from headquarters without cost. A meeting of the advisory committee of IAEI was scheduled June 8 in New York, just prior to the electrical section NFPA meeting June 9 and 10. At the latter, all changes proposed for the 1953 edition of the code were to be considered and processed for pre-publication in time for the fall section meetings.

The remainder of the meeting was devoted to comments from President Klawa, Ray Larrabee of Underwriters' Laboratories and to discussion of the resolutions referred to above.

The joint Oregon and Puget Sound Chapters meeting in Longview also was lively with code discussion and the aforementioned resolutions resulted. Another subject on which resolutions were passed at this meeting and the Utah Chapter was a request for a larger per capita allotment to the chapters from the national dues and for an associate membership for journeymen electricians at $6 a year. The feeling was that the sections now have been relieved of much of their accounting and dues collecting responsibilities by the IAEI. Hence $1.50 to $2 per member was requested for chapter operation. The associate membership for journeymen, since it must be borne by the man himself, was felt to be desirable to bring in more of the group that actually installs the wiring.

The Oakland joint meeting of the three chapters in northern California was featured by presentation to Ben Hill, retired Oakland chief electrical inspector, of a national honorary membership certificate. Mervin Bader of San Mateo presided, assisted by L. E. Woldit of the Sacramento Valley Chapter and T. W. McClosky of Fresno.

J. R. Sletten, general manager of Pol-Flo Paint Spray Corp., presented a paint spray container which can be heated electrically to maintain a temperature of 72 deg. The heating allows the use of lacquer and paints as they come from the can, without thinning, hence reducing danger from volatile gases. He explained the safety features of the device and asked for inspector approval of its use.

The abbreviated code requested by the Pacific Coast building officials conference was argued, most inspectors feeling that any abbreviation would prove inadequate but that if it had to be done, a committee of the organization should do it. Danger of fire where thermal insulation is blown into wall spaces around recessed lighting fixtures brought forth requests that changes be made in the National Electrical Code to eliminate such hazard. After some discussion of the aluminum wire situation it was voted to get a qualified speaker or speakers at the next meeting to bring the facts before the inspectors.

Klawa South

Stockton was selected as the place to hold next year's joint meeting, about a year hence.

The May meeting of the Southern California Chapter has been held for years at Long Beach and it was to this meeting Peterson presented some of the views expressed at the previous meetings. The resolutions passed at the Oregon and Puget Sound Chapter meeting brought forth lively discussion of the entire subject of proper identification of equipment listed by the laboratories.

Ben Wheater of Long Beach submitted recommended uniform grounding methods for the consideration of all inspectors in the area. Next meeting was scheduled for July 16 at Southgate.

At Scottsdale, the Arizona Chapter meeting, although only 20 were present, was filled with code discussion and the interest of the members was reported by Peterson to be very keen.

The Nevada Chapter, at Las Vegas, competed with the Utah Chapter for some of its speakers and attendants. It also competed with a Wild West Helldorado celebration and the attendance was not so large as expected.

Officers elected were: Howard Lindsay, chairman; A. R. Gregory, first vice-chairman; Charles Le Clare,

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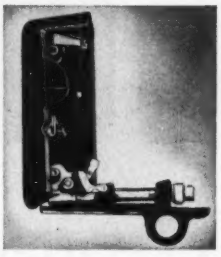
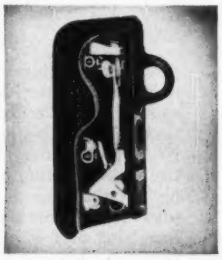


Drop-out

Reclosing



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second vice-chairman and R. L. Osborn, secretary-treasurer. The executive committee, in addition to the officers, has on it: J. Lyman Earl, R. J. Reitz, Harry Linnecke, M. E. Lundberg and I. J. Sandorf. The next meeting will be held in Elko, it was voted.

Utah Chapter meeting, compressed into a one-day session, was opened by a sympathetic address from Salt Lake City's Mayor Earl J. Glade. William T. South, chief inspector of South Salt Lake, chairman of the chapter, presided. Mayor Glade admonished inspectors not to try to take over the engineering or the management of the wiring business, but to be referees, whose job it is to see the rules are kept and thus assure the public of a good job. "Be careful not to offend the sensitivities of the people. You can do that even though you see that the law is enforced."

Chairman South gave testimony of the value of the chapter to his own work in the organization of the inspection department of South Salt Lake and summarized the benefits of IAEI to contractors, distributors, manufacturers and utilities.

John Pearson, assistant chief electrical engineer, Kennecott Copper Co., discussed some of the problems of a large industry in providing electrical protection for the safety of personnel, of equipment and for continuity of operation. That there is no equipment designed as yet to interrupt large amperages necessitates using what equipment is available and taking considerable chance with it. Among observations he reported that grounding to the reinforcing steel in concrete can result in the cracking of the concrete, due to poor connections and corrosion of the reinforcing steel which generates heat that breaks the concrete.

F. O. Wald, Utah Power & Light Co., described the Northwest Power Pool and how it operates. George H. Smeath of the Salt Lake County Planning Commission described the progress slowly being made to get a county electrical code and listed the objections raised by people at public hearings last year. However, he said, the commission has appointed several committees from among the protestants and asked their help in developing codes that will be acceptable for plumbing, electrical, heating and building.

The afternoon session, which was devoted to code discussion, was led by Loren Christensen, Salt Lake City chief electrical inspector. Among subjects covered in the discussion were marking of equipment such as air conditioners and fluorescent lighting fixtures with sufficient electrical data to enable contractors and inspectors to determine proper circuits to serve them; the use of the grounded receptacle for laundry equipment and even for all portable appliances; use of nonmetallic sheathed cable in concrete or cinderblock construction; whether service entrance cable logically should be allowed for feeders and other appliances, such as dryers, in addition to its permitted use for electric ranges; proper grounding methods for hospital operating rooms; derating of fused switches; whether more than six subdivisions of load can be served by connecting to the service without a main switch.

Officers elected were Orian Eskelsen, chief electrical inspector, Brigham City, Utah, chairman; Loren M. Christensen, chief electrical inspector, Salt Lake City, first vice-chairman; Moralee W. Silver, signal superintendent, Salt Lake City, second vice-chairman; and A. E. Fleming, General Electric Supply, secretary-treasurer.

The Rocky Mountain Chapter meeting was called to reorganize the chapter which, since the departure of Vic Moulton to New Mexico, has been dormant. Dale Markham of Colorado Springs, a former chairman, agreed to serve another term in the interest of re-establishing the chapter. Clifford R. Carpenter, fire chief, Ft. Collins, was named first vice-chairman; Charles McKendry, Englewood, second vice-chairman and M. E. Mentzer of Rocky Mountain Electrical League is secretary-treasurer. Plans to hold monthly meetings were discussed along with code and inspection problems.

Hoffman

Thomas

Wicht

Ready To Sell Again NAED Told

At a time when the electrical supplies wholesaling industry was occupied with problems of excess inventory and the likelihood of a decline in orders from government financed sources, the National Association of Electrical Distributors, meeting at Victoria in May, concentrated on a program emphasizing increased sales promotion activity and better organization of the wholesaling concerns.

It was the largest Northwest meeting of the NAED. More than 300 wholesalers and their manufacturer guests convened for the semiannual Pacific Zone Convention.

Great responsibility for the future success in the distributing business depends on the ingenuity of management, said Austin Little, sales manager of the Pressteel Co., Berkeley, Calif., in the opening address to the NAED conference. "The sales executive must program his efforts so that he has the time to do constructive planning. He must allocate an ever-increasing part of his time to do constructive planning . . . and to basic thinking and the development of profitable ideas. He must develop men to make better use of their time and abilities," Little suggested. In relation to sales, he said that the distributor should "encourage men to bring in ideas. The man in the field has a different 'slant' on things. Treat him

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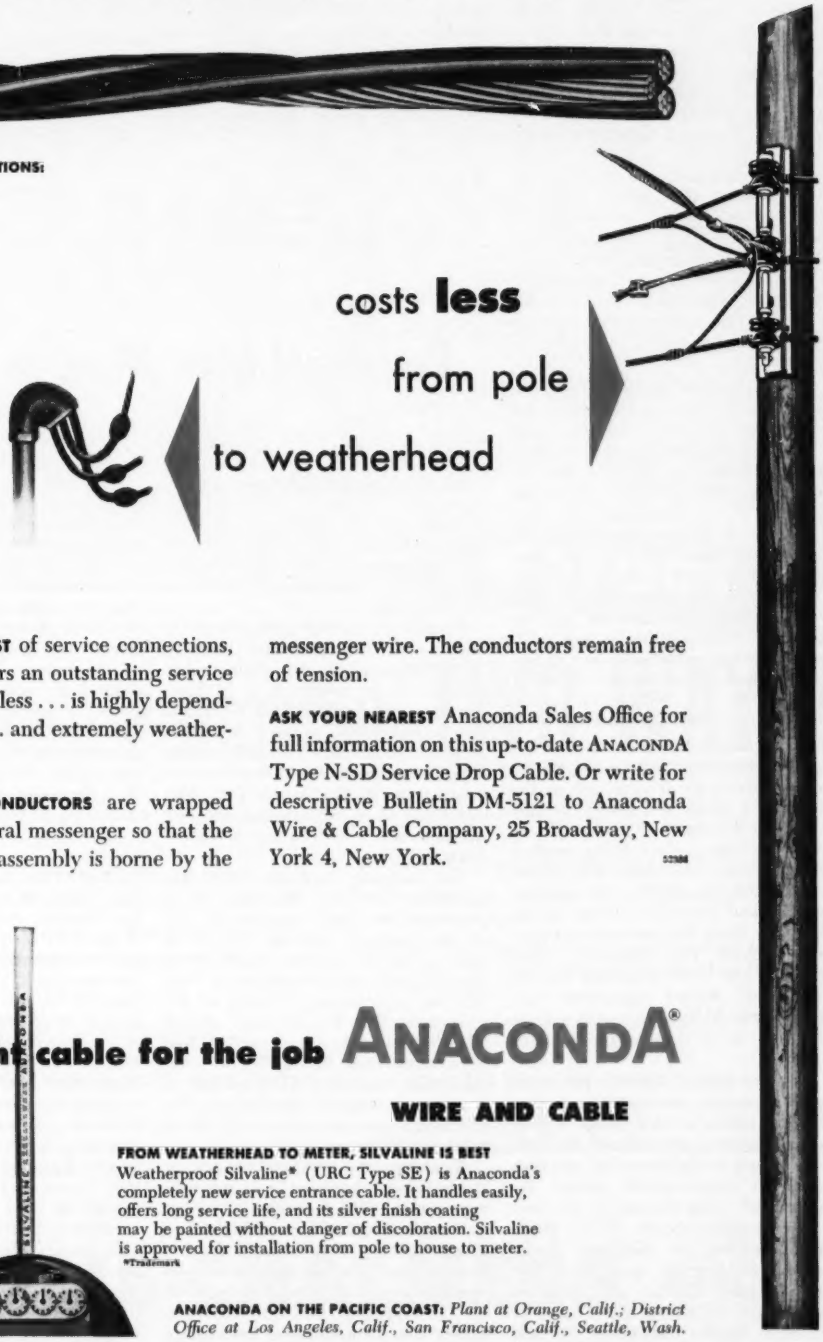

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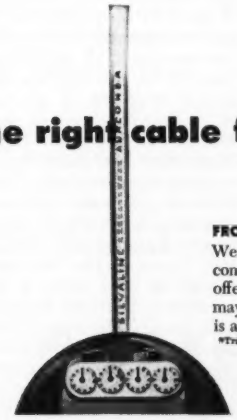

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ANACONDA ON THE PACIFIC COAST: *Plant at Orange, Calif.; District Office at Los Angeles, Calif., San Francisco, Calif., Seattle, Wash.*

kindly—remember, management has no corner on ideas."

Indicating the emphasis now being placed by the NAED on the importance of the appliance field was the address by John M. Wicht, Blackstone Corp., Jamestown, N. Y. Pointing out that the appliance industry was experiencing a period in which the contact between manufacturer and customer was closing, Wicht said that "it behooves a distributor to determine whether he joins a pattern of controlled distribution with a multiple line producer." He said that as manufacturers shorten their connections to the consumer, "they can outmaneuver you from direct outlets because they control margins. Unless independent distributors take cognizance of the trend and the production facts, they will find themselves at the end of a dry run."

An optimistic view of business conditions for 1952 was presented to the wholesalers and their guests by John Clark, consulting reporter and analyst, Dun & Bradstreet, Seattle. He reported that, "If the forces alive in the economy at the start of the year and continuing in strength throughout the first quarter have full play, an optimistic view seems entirely justified. The two outstanding aspects that dominate any examination of the country's economic health are: (1) the manner in which defense spending now and in the future will affect the economy; (2) what is happening to ordinary nondefense business.

"The current estimates are that defense expenditures will be $45 billion in the current fiscal year and in the June 1953 fiscal will jump to $65 billion. At the outset of 1952 the backlog of defense orders being worked on by industry was about $35 billion, in addition to which the defense agencies had about $33 billion of unobligated funds for procurement purposes. These two elements, when added to the funds requested for the 1953 fiscal budget, aggregrate approximately $110 billion of work on order or to be contracted," Clark stated.

In other major addresses presented at the spring convention, Arthur Hooper, editor of *Electrical Wholesaling* magazine, pointed out the need for a return to fundamental practices in which ethics would govern the methods of doing business in the electrical supplies industry. H. L. Hoffman, president of Hoffman Radio Corp., Los Angeles, spoke on "The Entertainment Dollar and How to Get It." In discussing the relation of television to the distributor, he said that "Television has its awkward moments and will have them again. We had them last year when, influenced by the government's talk of shortages, we forgot that this is a seasonal business . . . Normally the industry will produce and sell 40% of its goods the first six months and 60% the second six months . . . Last year we produced 60% of our goods the first six months, consequently we got in trouble. This year, however, inventories of most well-accepted brands are at levels consistent with current sale."

W. C. Mainwaring, vice-president, B. C. Electric Co., reviewed the progress of British Columbia during the past few years, showing the rapid development being made in both industrial and raw material production.

Arrangements for the spring convention of the Pacific Zone of NAED were handled by William Jewell, James Hartwig and Bert Hubenthal. The program was arranged by M. E. Robertson, Irving P. Bean, Bruce Wilson and S. S. Brundage. Leslie Stusser was in charge of entertainment. Nelson R. Thomas, chairman of the Pacific Zone, presided at both general sessions, and R. A. Balzari, secretary, co-ordinated the activities. The fall 1952 convention will be in Coronado.

Personnel Men Meet in Victoria

Manpower clinics dealing with employment, training programs, pension plans and employee relations were featured at the Northwest Electric Light & Power Assn.'s Personnel Section conference in Vancouver, B. C., May 19-21. L. B. Jack, B. C. Electric, was chairman.

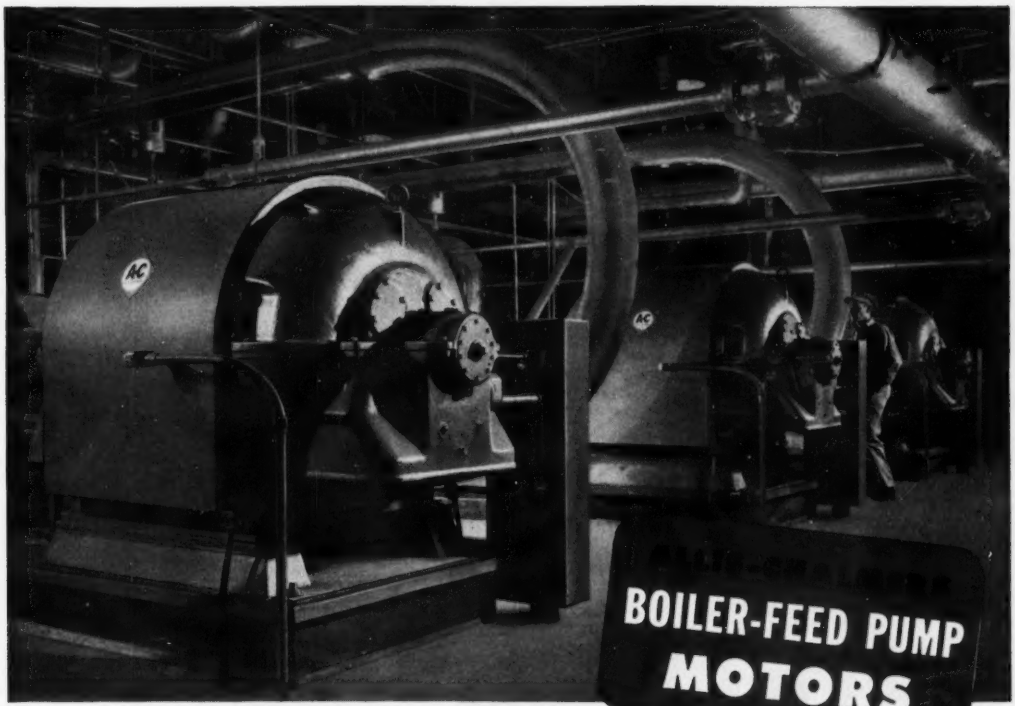
Sounding a note of optimism at the opening of the personnel meeting, W. C. Mainwaring, vice-president and assistant to the president, B. E. Electric Co., stated that British Columbia was enjoying the greatest industrial growth in its history. This had brought about an unprecedented development program in B. C. Electric Co., with expansion of its organization and emphasis on safety activity and personnel work.

The company expansion story was amplified by Tom Ingledow, vice-president and chief engineer, at one of the luncheon sessions. He stated that at the end of the war, in 1946, the company had a capability of 175,000 kw, representing 50 years of development. In the five-year period, 1947-51, he said, this capability had been more than doubled. The company had expended $134 million in the postwar period to the end of 1951, and in the next five years would spend $140 million more.

Reporting on accident records of the member companies over the five-year period, 1947 through 1951, Fons J. Hughes, Pacific Power & Light Co., stated that the trend of both the frequency and the severity rate was down from the high reached in 1949. C. C. Haggard, California Oregon Power Co., demonstrated low-voltage hazards using electrical devices, models of line construction and photographs for illustration.

At the first luncheon meeting, R. H. Sessions, Idaho Power Co., explained the controversy now going on as to whether Idaho Power Co. or the Bureau of Reclamation would develop power in Hell's Canyon of the Snake River. The proposed high-head dam of the bureau would be wasteful as against the company's five low-head dams to utilize the same head, he said. The cost per kilowatt under the government proposal would be twice that under the company's plan. Further, the government's claims of downstream power benefits have been greatly exaggerated, Sessions pointed out in his talk.

Most of the program was organized into clinics of problems of personnel departments, with discussion leaders assigned to each clinic. In the discussion of problems of employment and manpower, R. B. Middleton, B. C. Electric Co., brought up some of the special problems of placement such as placing handicapped workers and long-service employees who have outlived their usefulness but have not reached retirement age. The clinic on training problems led by Marlon Bateman, Utah Power & Light Co., agreed that training is fundamentally the responsibility of management, though in cases where a closed shop contract is held, the union is responsible for lineman training. Most training programs are conducted on company time, unless it is the type of training that is voluntary and is primarily for personal development,



Three Allis-Chalmers 1500-hp, 3580-rpm cage motors driving pumps in Alabama Power Company's Gorgas Steam Plant.

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BECAUSE LOSS OF FEEDWATER can lead to extensive boiler damage, it is common practice to provide protection by means of a standby boiler-feed pump unit. It is equally good practice to insist on the additional protection of the operation-proved reliability of Allis-Chalmers motors.

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As the result of a quarter century of development, A-C two-pole cage motors offer you these features:

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- Air distribution arrangement that eliminates hot spots in both stator and rotor.
- Forged end rings, drilled for cage bars.
- *Dew-drop* bars that give better performance and stay tight in rotor core.
- Oxygen-free copper or deoxidized copper-base alloy bars and end rings to eliminate embrittlement from silver-brazing.
- Separate steel balancing rings for dynamic balancing without weakening end rings.

BULLETIN TELLS THE INSIDE STORY

For more details about these large two-pole cage motors, ask your nearby A-C representative for Bulletin 05B7550, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

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The electronic circuit of the Series 63300B control provides dependability made possible by over seven years of practical experience. Amplifier tubes consistently have a life of more than 20,000 hours. Other components have much longer life. Units are rated 2500 V.rms hipot to give maximum resistance to the effects of lightning transients. The built-in contactor is conservatively rated to handle a 3000 watt lighting load. The unit has Standard meter socket plug-in construction with cross-arm mounting bracket which gives great installation flexibility.

The control itself gives *truly* economical (*low* purchase cost, *low* installation cost and *low* maintenance cost) and effective service backed by an extensive engineering service organization field experienced in street light control application.

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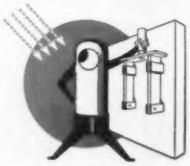

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when it is on the employees' own time.

Salary administration problems were the subject of the clinic conducted by Peter Piper, Washington Water Power Co. The need was seen for comparison of companies' wage scales for similar jobs and a committee was organized to develop job descriptions of 20 to 25 key jobs with their rates of pay.

Methods used to bring about equal responsibility among union officials and management in the administration of labor contracts was the principal discussion in the clinic on labor relations, led by Pat Holton, Utah Power & Light Co. One company had had good success with periodic meetings with superintendents, shop stewards and union contract representatives in each district. It was the consensus that grievances should be settled at the lowest possible level.

In the administration of welfare and pension plans, with C. Herald Campbell, Pacific Power & Light Co., as discussion leader, it was brought out that executives should avoid trying to decide individual requests on merit, but should refer them all to the administrator; that booklets are useful in bringing the value of fringe benefits to the employee; and that explanations of such benefits should be a part of the induction procedure. Difficulties in policing sick leaves were aired and it was agreed that the union could and in most cases does help in administering sick leave benefits to avoid malingering and other such abuses.

Some of the difficulties of keeping effective liaison between personnel departments and line organizations were discussed in the clinic on this subject under the chairmanship of Louie T. Matter, Puget Sound Power & Light Co.

A subject of major interest in the clinic on safety problems, conducted by C. B. Greenough, Mountain States Power Co., had to do with the use of hard hats by linemen. This is compulsory in only one company and optional elsewhere. It was thought to be a good safety measure by safety engineers and some headway is being made in selling the men on the idea of wearing such hats.

A feature of the meeting was a demonstration of hot-line work using live-line tools by Clifford R. Smith, hotstick instructor of Portland General Electric Co., and Pat Kelly, instructor in the Pacific Power & Light Co., assisted by Roland Blantz, safety engineer of Portland General Electric Co., acting as groundman.

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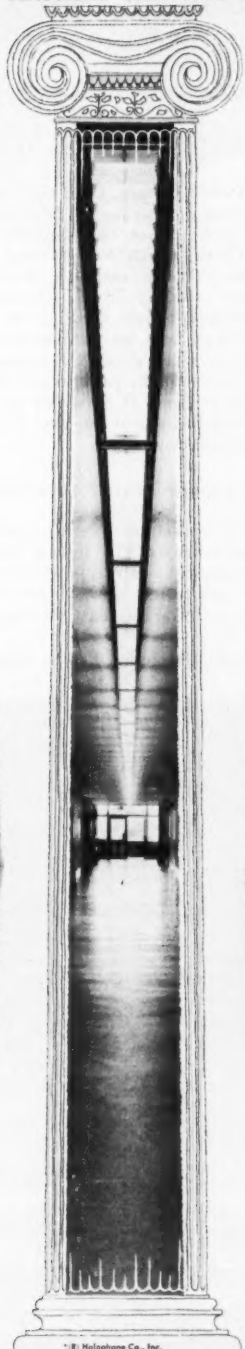

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Fully enclosed for minimum maintenance, over 470 Sunbeam #H8080 series were installed in the Law Building. Notwithstanding the 16-foot ceiling in the library, these units, equipped with Controlens elements, provide more than 50 footcandles of illumination at the desk level.*

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THE MONTH IN BRIEF

PUD Lacks Authority to Build Dam, Judge Rules

Pend Oreille County PUD of Newport, Wash., has lost the first test of its legal authority to build the proposed $16 million Box Canyon Dam. Basing his opinion on a state supreme court interpretation of an earlier PUD case, Superior Court Judge Richard B. Ott ruled that the district lacks authority to build the dam. He found that, under the law, single PUDs can build dams for their own needs but stated that Pend Oreille PUD had failed to show that more than 51% of the power generated would be sold within the district. The PUD, which has received tentative approval for a $16 million RFC loan, will appeal the decision to the state supreme court.

Company Completes Third Plant on Umpqua

Power has started flowing from California Oregon Power Co.'s Soda Springs plant, third in a projected eight-unit development on the North Umpqua River in southwestern Oregon. Plants already energized in addition to Soda Springs are at Toketee Falls and Slide Creek. Still to be completed are two units at Clearwater Creek, two at Lemola Falls and one at Fish Creek. The three plants in service supply approximately 71,750 kw; the eight plants will total 145,000 kw. The full development with transmission lines is expected to cost $30 million. Soda Springs alone cost approximately $3.5 million.

Obstacles to PUD Plan Pointed Out

Announcement by Grant County, Wash., PUD that it proposed to build a $250 million dam in the Columbia River at Priest Rapids was greeted with skepticism. The same project has been authorized as a $375 million multipurpose dam to be built by the Corps of Engineers. PUD officers said the development would be financed by sales of revenue bonds, but power men pointed out that the cost would exceed total assessed valuation of Grant County, which would make financing difficult, if not impossible. They also stated that no land for the project can be condemned without FPC permit. The Priest Rapids site lies between Chief Joseph and McNary Dams, now under construction by the Engineers.

Steel Delivered for Northwest Lines

Stating "we are tax payers too," striking steelworkers at Seattle permitted shipment of steel for power line towers in the Northwest. Included were about $1,000 worth of angle irons fabricated at the Bethlehem Pacific Coast Steel Corp.'s Seattle plant for Bonneville Power Administration and five tons of angle irons for Seattle City Light. It was estimated that delay in parts for a power line from the Hungry Horse Dam was costing the government $22,000 a day and that failure to secure parts for its Skagit-Seattle line would have cost City Light $5,000 a day.

Neighboring County Protests District Project

El Dorado County, Calif., is trying to balk attempts by neighboring Sacramento MUD to secure preliminary hydroelectric power rights on the Rubicon River and Silver Creek, which flows through El Dorado County. The district's application is pending before FPC. A resolution adopted by El Dorado County board of supervisors contends there is no reason actuated by need or logic why Sacramento should seek a mountain water supply at a cost of millions of dollars which would require many years to amortize before any profits could be realized. It asks that the application hearing be held in Sacramento so that El Dorado County protestants can appear.

Voters Approve Power System Expansion

Voters of Gallup, N. M., have approved a bond issue to finance a $1.7 million expansion program for their municipally owned power system. The town board earlier had turned down Public Service Co. of New Mexico's offer to purchase the system.

Cost Must Determine Policy, Chamber Says

That all the people, not just a few, must be considered when building a transmission line was the decision of the Los Angeles Chamber of Commerce, which went on record last month as favoring underground line construction only when the total cost is not greater than for overhead lines. The chamber appointed a group to study the question when the department's proposed overhead transmission line from the San Fernando Valley was protested by property owners.

Provo Group Turns Down USBR Proposal

The Provo Water Users Assn. late in June rejected USBR proposals for consideration of a small hydro plant at Deer Creek reservoir in Utah and renewed a request that it be permitted to construct and operate the plant in conjunction with the Utah Power & Light Co.

Utility Planning First Rate Boost in 30 Years

Hawaiian Electric Co. may ask for its first rate increase in more than 30 years. Rising costs and a $22 million construction program require additional revenue, according to company officials. It was not said when the PUC would be asked to approve new schedules or how much would be asked.

Corette Named President of Montana Power

Appointment of J. E. Corette Jr. as president of Montana Power Co., succeeding F. W. Bird, was announced late last month. Bird was made chairman of the board. Corette has been a vice-president since August 1944 and was legal counsel from 1934 to 1944.

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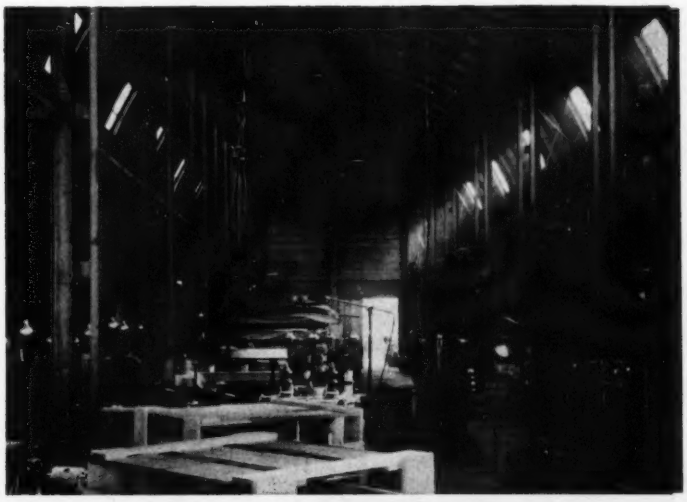

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THIS MONTH'S NEWS

New Steam Plant on Line In Salt River Valley

Generating facilities of the Salt River Valley Power District in central Arizona were increased 30,000 kw when the Kyrene steam plant was put on the line last month. The $4.5 million plant will be supplemented by a 60,000-kw addition approved by shareholders on June 17 by vote of 23,667 to 10,449.

The Kyrene steam plant is Arizona's first central station steam plant of the outdoor type. All major component equipment is installed without enclosing structure. Most of the auxiliary equipment is in an area enclosed by masonry walls. In the same area are the control room, instrument repair room, chemical storage rooms, laboratory and offices, all air conditioned. The plant can be maintained by three operators.

Cooling water is pumped at the rate of 26,000 gal per minute from a concrete intake basin on the Western irrigation canal. This coolant is returned to the canal several hundred feet below the plant.

Redwood cooling towers northeast of the plant can cool up to 19,600 gal of water per minute and will be used when the canal is dried up for repair or lack of water.

The boiler produces 350,000 lb of steam per hour; is fired with natural gas with provisions for burning oil in emergencies.

The G-E turbine-generator is rated at 30,000 kw; can produce up to 37,500 kw. Two 20,000-kva transformers step up the voltage to 69 kv for transfer through the switchyard west of the plant and into the system's main transmission lines.

The plant was built by Bechtel Corp. in 14 months.

PUD Will Help Finance Study of Dam Site

The Okanogan County PUD of Okanogan, Wash., had adopted a resolution budgeting $30,000 for next year to cooperate with the Corps of Engineers in proposed study of a dam site on the Similkameen River at Shanker's Bend near the Canadian border. Power and reclamation men for years have tried without success to get the $30,000 included in an engineers' civil functions bill. The proposed structure would be a low dam, near the Similkameen's confluence with the Okanogan River, a tributary of the Columbia.

FPC Hearings on Snake Project Scheduled

FPC hearings on Idaho Power Co.'s application for license to build a power plant on the Snake River will be held in Baker, Ore., and Boise, Idaho, commencing July 16 at Boise. Known as the Oxbow development, the proposed dam would be the first in a projected series of five on the Snake. It would include a dam, 13-mile-long reservoir and a 140,000-kw power plant. Estimated cost is $24,925,000.

● **Seven of the nine bids** submitted on Nimbus Dam in California's American River were lower than USBR estimates. Winston Bros. and John Construction Co. of Monrovia were apparent low bidders, with an offer approximately $800,000 under government engineers' estimate of $6,874,936.

PG and E Starts Work on Buhne Point Steam Plant

Pacific Gas and Electric Co. will add 40,000 kw to its capacity with its $10 million steam-electric generating plant at Buhne Point on northern California's Humboldt Bay.

Scheduled for completion in three years, preliminary design work is under way and field construction will start next year.

Until the power plant starts operation the utility's new 110,000-v line from Cottonwood, its third transmission line into Eureka, will give the growing area enough power. The line will be in operation by next winter.

Shoring work on the north side of Buhne Point to prevent further sea erosion has been going on since May, and a 3,000-ft rock revetment is expected to be finished by September.

● **Golden Valley Electric Assn.** of Fairbanks, Alaska, has applied to the REA for a $1 million loan to finance an extensive construction program, according to Earl J. Smith, supervisor of the association. The program will include a transmission line to Big Delta, feeders to serve nearly 250 homes, a headquarters building in Fairbanks and two-way radio communications equipment.

New Kyrene station of the Salt River Valley Power District, Arizona's first out-door-type central station plant. Efficient arrangement permits its operation by three men

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Chance Hot Line Clamps are the standard of many companies for all applications. They are moderately priced, yet have quality features that mean better line connections . . . high current capacity . . . high mechanical strength . . . and longer conductor life.

Whatever your requirement—when you specify CHANCE—you can make your selection from *the most complete* line in the industry. Chance Hot Line Clamps are designed on the basis of extensive research and years of connector know-how — they're built by the leaders in the development of hot line clamps.

FLIP-TAP CLAMPS

The Chance Flip-Tap Clamp features a grease chamber, filled with a corrosion resisting compound which prevents the clamp from sticking on the conductor. This clamp is easily guided to the line and is tightened by turning the eye-screw. Jaws of the clamp will take conductors ranging in size from No. 8 solid copper to 4/0 stranded copper or 3/0 ACSR.

PROTECTED CONNECTION CLAMPS

These new Chance hot tap clamps will not "freeze" on the line . . . will not heat excessively . . . will not damage or overstress your conductor . . . and will positively maintain contact throughout the life of the installation. They are available for aluminum or copper connections in sizes to meet every requirement.

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Make permanent or temporary hot tap connections that hold tight without sticking and stay put without vibrating loose. USS threads screw up fast, hold tight . . . yet can be readily unscrewed with a clamp stick. They are available for all types of connections in a complete range of sizes to meet every requirement.

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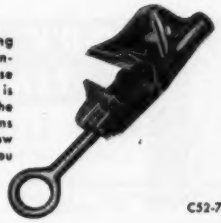
These connectors apply to conductors without removing bolts—the swinging center spacer and base eliminate the necessity of removing nuts and lock washers when applying to conductors. No annoyance of losing nuts or washers—application is quicker and easier. Chance U-Bolt Connectors simplify your inventory problems —only three sizes are needed. Available for aluminum or copper conductors.

PARALLEL GROOVE CONNECTORS

Inexpensive, easily installed, lightweight connectors for use on line construction. All connector bodies plus galvanized bolts, nuts and lock washers are corrosion resistant. Available in a complete range of types and sizes. Heat treated aluminum, galvanized contact copper, or all copper.



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Here is a typical Davey line clearance job on Highway 101 near King City. Work done for Power Company clearing 60 K V power lines. Note improvement from standpoint of both Utility and public. Davey saves trees . . . saves money . . . creates goodwill.

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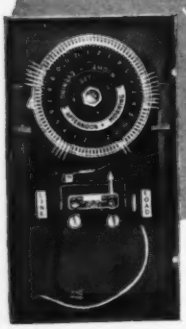

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PS OF NEW MEXICO MAKES OFFER TO COOPERATIVE

Public Service Co. of New Mexico has made an alternate proposal to a cooperative's plan to build a $5,835,000 steam-electric plant at Espanola, N. M.

Plains Electric Generation & Transmission Cooperative has secured approval of a $9,045,000 REA loan to build the plant and transmission lines to serve 12 member co-ops in New Mexico and Colorado.

The power company says that it could save the co-ops the cost of the plant, a substantial investment in transmission lines and provide service for a majority of the members at less than they can produce it for themselves.

The cooperative maintains that the company would make service available to only four member co-ops; that there is no method under which the REA could advance funds for transmission lines to be turned over to the company free from mortgage liens; that the company's commitments would not extend beyond 1955; that the cost would continue to be high.

In answer the company argues that, where it cannot serve, other power companies and USBR can; that, if its proposal is accepted, it will install needed capacity for the future; that the original program called for sale of power by the co-op to Public Service and that during delays since the original proposal was drawn up in 1951, the company has gone ahead with its own expansion program.

The company's proposal includes reducing cost of power to the eight northern cooperatives from 1.22c (estimated delivery cost from the proposed Espanola plant) to 0.9666c average per kwh at 50% load factor, if power is purchased on a firm basis. Other savings are claimed if allowance is made for stand-by facilities and additional plant capacity soon to be required. Present co-op load is 18,000 kw.

● **S. Morgan Smith Co.** of York, Pa., has been awarded a USBR contract to build two 9,400-hp hydraulic turbines for the Nimbus power plant on the American River in California. The Smith bid of $488,575 was the lowest of five submitted. The company specified delivery time of 780 days for the first turbine and 840 for the second. The Nimbus plant will be several miles downstream from Folsom Dam.

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• For complete information regarding the Pinco 1060 and other Suspension Insulators, refer to Pinco Catalog No. 49, Pages 62 to 73.

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CITY LIGHT REVENUE BONDS APPROVED

The utilities committee of the Seattle city council has approved the request of E. R. Hoffman, City Light superintendent, to sell $25 million in City Light revenue bonds to finance the remainder of construction under way on the Skagit River as well as distribution system improvements.

The bonds will be the last of a $53 million issue authorized by the council on Jan. 1, of which $28 million already has been sold. The bonds would be dated Sept. 1, 1952, and have maturities ranging from 18 to 35 years.

One reason for selling the bonds at this time is that there has been some discussion of new federal laws taxing municipal revenue bonds.

Anchorage Power Plant Approved by Council

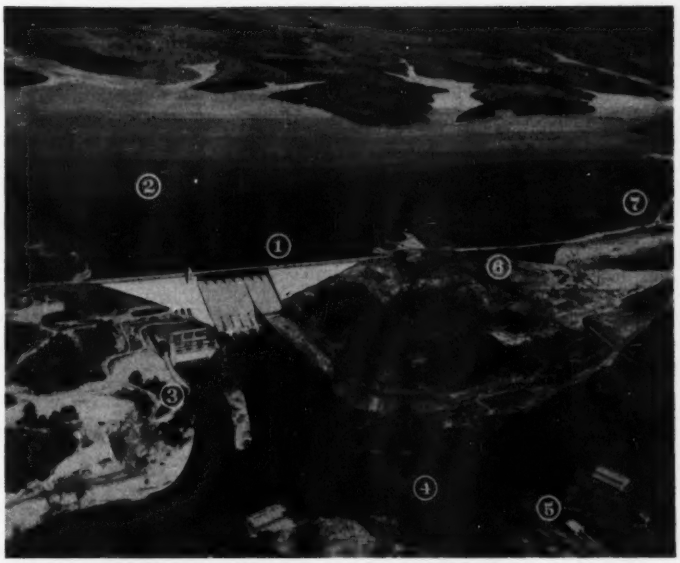
Preliminary plans for a $3,796,000 steam power plant at Anchorage, Alaska, have been approved by the Anchorage City Council, with an early bid call expected.

The building will include a first unit of 7,500 kw capacity, with space allowed for later addition of an 11,000-kw unit. Oil will be used for fuel, with an 80,000-gal storage capacity specified. Salt water from Cook Inlet will be used for cooling.

The council decided to allow space for the second unit after City Manager Robert Sharp predicted that the Bureau of Reclamation's nearby Eklutna hydroelectric project, now under construction, would be inadequate a few years after completion and that "everybody will be looking for more power again." The municipal project is intended to supplement and eventually replace present diesel equipment.

● **Reservoir gates** have been closed at Albeni Falls Dam, under construction on the Pend Oreille River near Newport, Wash., to impound 1,400,000 acre ft of water, which can be released this winter to add to power production at downstream dams on the Columbia River. The impounded water will add 100,000 kw of power to Pacific Northwest supplies this year. Power-generating facilities at the damsite are scheduled to go into operation in 1954 and 1955.

● **Idaho Power Co.** has started construction of a 67-mile 69,000-v transmission line from Vale to Unity in eastern Oregon. The line will connect at Unity with the California Pacific system, which purchases electricity from Idaho Power. The new facilities, which cost more than half a million dollars, will be in operation late this year.



Air view of Folsom Dam site with artist's conception of the project as it will look when completed in 1955. The main dam (1) is under construction by the Corps of Engineers under contract to Merritt-Chapman-Scott of New York and Savin Construction of New Hartford, Conn. The reservoir area (2) will hold 1,000,000 acre ft of water. Near (3) will be the 162,000-kw power plant being built by USBR. On completion the development will be operated by the bureau as part of the Central Valley project. Other designated areas (4) fence surrounding Folsom Prison, a short way downstream from the dam on the east bank of the American River; (5) buildings of the Folsom Prison farm; (6) one of the earth fill wing dams; (7) the Mormon Island Auxiliary Dam. Photograph and artist's conception were made by the United States Bureau of Reclamation

● **Purchase** by the Stevens County PUD of properties of the Stevens County Electric Cooperative near Colville, Wash., has been completed for a reported $1.2 million. Carl C. Moore, manager of the cooperative for the past 11 years, will continue as manager under PUD ownership. The cooperative served more than 2,300 accounts in Stevens and eastern Ferry Counties with 1,050 miles of line. The PUD financed the purchase with the sale of $2.2 million in revenue bonds.

● **A contract** for the construction of 36 houses, a commissary, a warehouse and for the installation of water main, sewerage and lighting facilities for City Light's Diablo housing project has been awarded by the Board of Public Works to Thorburn & Logoco, Seattle contractors, for $1,020,383.

Skagway Plant Studied For Defense Production

The proposed $500 million Taiya hydroelectric project near Skagway, Alaska, is under consideration by the DPA as part of a program to increase aluminum production, according to a statement made at Juneau, Alaska, by George Sundberg, general manager of the Alaska Development Board.

Sundberg had just returned from Washington, D. C., where he conferred with Samuel W. Anderson, deputy administrator for aluminum in the DPA.

The project calls for taking water from five lakes which are fed by rivers originating in the Yukon Territory and British Columbia. A 30-ft tunnel would extend 14 miles through granite to a power house that would produce about 1,500,000 kw, reportedly at lower rates than at Grand Coulee Dam.

The project hinges on establishment of an aluminum industry in Alaska, shipping in aluminum for processing into aluminum with Alaska power.

ENGINEER SAYS PLANTS WOULD SAVE MILLIONS

Construction of proposed power plants on the Cowlitz River by the City of Tacoma, Wash., would save a minimum of $80 million during the next 50 years, Walter Gordon, Tacoma electrical engineer, told the Seattle Chamber of Commerce recently.

The $80 million saving represents the difference between the cost of Cowlitz power and the cost of power that would have to be purchased from the Bonneville Power Administration, Gordon explained. This would far exceed any possible loss in fisheries, he declared.

The proposed dams, with an ultimate capacity of 460,000 kw, have been approved by the Federal Power Commission and bids for generating equipment are expected to be called soon.

E. R. Hoffman, Seattle City Light superintendent, was brought into the discussion and expressed the opinion that the Pacific Northwest soon must decide whether it will have a "steam economy or a hydro economy." Regional power demands are increasing at the rate of 400,000 to 500,000 kw yearly, he pointed out, which means that a hydroelectric project the size of the Cowlitz project should be started each year.

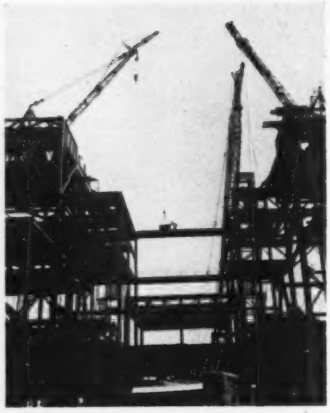
Tacoma has two steam plants with a combined capacity of 34,000 kw but operates them only in emergency because of high cost and because a single year's increase in Tacoma power demand far outstrips the entire steam capacity, Gordon said.

Fraser River Potential Told by B. C. Man

One of the great hydroelectric projects of the world awaits development on the Fraser River in B. C. according to H. V. Warren, professional engineer and professor of geology at the University of British Columbia.

Dr. Warren stated the dam would cost $500 million at Moran on the Fraser between Prince George and Lillooet. He said this development would be of the same order of financial magnitude as contemplated expenditures of Canada on the St. Lawrence seaway project.

Dr. Warren said the dam would compare with Grand Coulee, Bonneville, Hoover and Hungry Horse Dam developments of the United States government. He stated that navigation of the Fraser River, flood control, agriculture and forestry would all benefit by this development.



Recent photo at site of Edison's Etiwanda steam plant shows structural steel work

"The Fraser," said the speaker, "is one of the greatest potential sources of energy for British Columbia and the Pacific Northwest, and it will become the hub of industrial development greater even than that contemplated by Alcan at Kitimat.

"Three dams between Prince George and Lillooet — the Lillooet with head of 720 ft and Cottonwood with a head of 250 ft—could provide waterpower estimated conservatively at about two million horsepower."

The engineer, however, forecast that Moran alone could have a potential of three million horsepower.

● The electric business-managed utilities television network program, "Production for Freedom Theatre," started June 22 over the ABC-TV network, with a 13-week series to tell the industry's story and the importance of electric power in our economy. The first program was titled "Powering America's Progress," and dealt with the coal industry. Western stations carrying the program are KECA-TV, Los Angeles; KGO-TV, San Francisco; and KING-TV, Seattle.

● **To help pay** for its expansion program, the Los Angeles Department of Water & Power will sell $17 million in electric plant revenue bonds to the First Boston Corp. The sale was approved June 10 by the Board of Water & Power Commissioners. Net interest cost of the bonds to the department will be 2.288%.

ENGINEERS WILL STUDY EAGLE GORGE PROJECT

A $75,000 planning allocation by President Truman will enable the Seattle District, Corps of Engineers, to initiate preliminary planning for the proposed $19.4 million Eagle Gorge Dam on the Green River south of Seattle.

Although authorized as a flood control project in 1950, possibilities of using the dam for power production will be studied according to Lieut. Col. A. J. D'Arezzo, acting district engineer. Power production was regarded as impractical in preliminary studies, because of the necessity for emptying the reservoir whenever flood conditions are indicated.

The dam has been sought by Seattle industrial interests to aid in the development of new industrial sites in an area now often devastated by floods.

Contract Let for Aluminum Towers

Yarrows Ltd., Victoria, has received contract for construction of 41 aluminum towers to carry part of the 48-mile transmission line of the Aluminum Co. of Canada from Kemano hydro station to the Kitimat smelter.

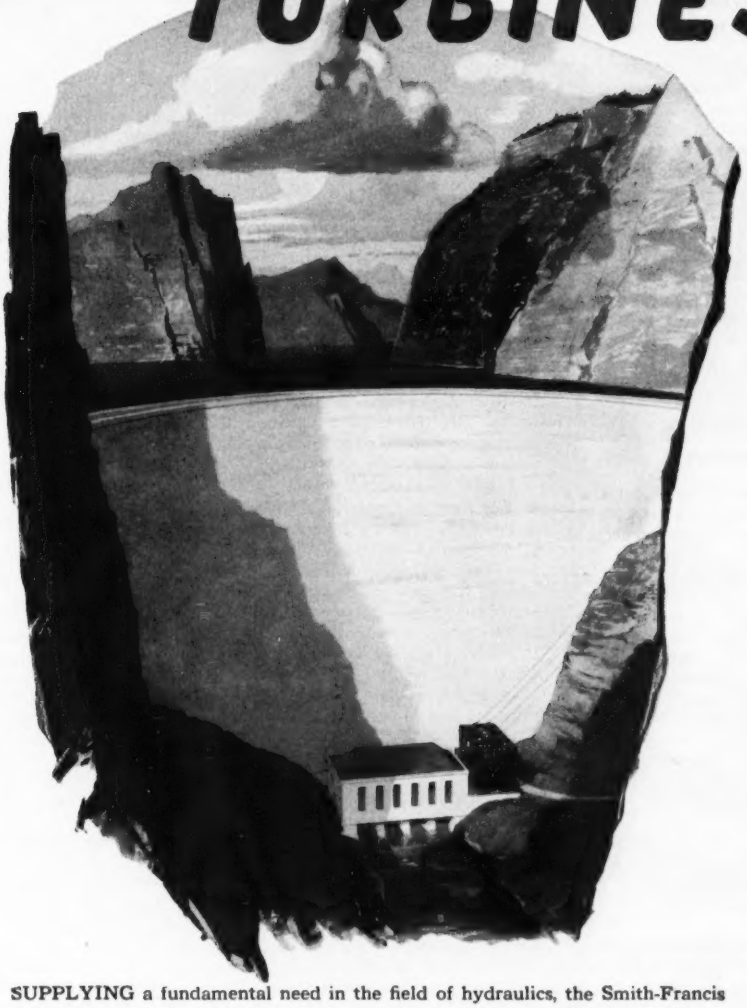
The aluminum towers were approved after tests had been made to determine if two sample towers could stand the severe climate conditions experienced at the mountain top traversed by the line. Aluminum towers will save steel and minimize transportation difficulties. Much of the equipment for the line will have to be moved by air.

The 41 towers will cost more than $800,000. An average of 120 men will be employed for over three months in their construction.

The towers were designed by Dr. K. Sutter of Aluminum Laboratories, Geneva, Switzerland.

● **The Victor and Cripple Creek** districts, long served with 30 cycles, are being converted by Southern Colorado Power Co. to 60-cycle frequency. A complete change-over is not being made, the two frequencies being run in parallel down the alleys and the customers may have the choice of either one, depending upon their equipment. Work for the change-over in Cripple Creek is nearly finished and work is progressing rapidly in Victor.

FRANCIS TURBINES



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STRIKE SETTLED BY COLORADO COMPANY

A 16-hour strike of Denver Building Service Employees union, AFL, against Public Service Co. of Colorado was settled July 1, with the signing of a one-year contract calling for a 4.4% wage increase retroactive to May 1. There was no service interruption.

Since all moot points had been settled on May 31 by bargaining representatives, Dick Cordtz, Local 105, International Association of Service Employees, and Fred Witsell, Public Service vice-president in charge of employee relations, the picket lines were attributed to a personality clash between the custodians and one of their supervisors.

Denver has been comparatively free from strikes and the "on again, off again" aspect of the negotiations was believed by some to be a case of organized labor flexing its muscles.

Rainmaking Confined to Ground Generators

The Salt River Valley Water Users Assn. has decided to concentrate rainmaking efforts to ground generators for the rest of the fiscal year.

Ground generator time costs approximately $2 an hour. Airplane seeding costs $10 an hour. Success of both methods has encouraged the association to vote $11,250 to the Arizona Weather Research Fund for use the remainder of this year.

Expenditure of $37,500 has been made since December in the precipitation-production program. Of this, $34,000 has been for flying time application and $3,500 for ground installations.

Airplanes were in the air seeding clouds for 340 hours. Ground generators have worked about 1,750 hours in the past seven months.

● **Production for Freedom** celebrations showing how America has turned out the goods for peace and defense through the private enterprise system are being sponsored by the Electric Companies Public Information Program. The observance is not exclusively a report on the past, but is being keyed to the future as well. Western utility men on the committee include G. M. Gadsby, Utah Power & Light Co.; J. E. Loiseau, Public Service Co. of Colorado; Kinsey M. Robinson, Washington Water Power Co.

● **Commemorating** a century of engineering progress in the "far corners" of the nation, professional engineers of Oregon, Washington and Idaho will hold a one-day Northwest Engineers Centennial in Portland, Aug. 9. General theme of the meeting will be the profession's civic and public responsibilities. W. C. Williams, president of the Professional Engineers of Oregon, will be host, assisted by E. L. Mathes, Boise, president of the Society of Professional Engineers of Idaho, and H. Jack Reeves, Spokane, president of the Washington society. R. Evan Kennedy, Portland engineer, is general chairman.

● **A 1.03% cost-of-living wage increase,** retroactive to March 17, 1952, has been approved for General Electric Co. employees at Hanford Works by the Atomic Energy Commission. Added to the 1.08% cost-of-living increase and the 2.5% general adjustment awarded last September, the new increase makes a total of 4.61% added to G-E pay in the past seven months. Approval was also granted for a three-week paid vacation to employees with 15 or more years continuous service with the company.

● **Los Angeles Department of Water & Power** has given a general increase of 4.6% to all salaried employees of the municipal utility. The increase, which will add $1,859,660 to the department's annual pay roll, affects 9,342 who are employed on a monthly or annual basis. It does not affect those employees on a daily basis, or construction workers, whose rates are tied in with the general construction industry pay scale. Effective date of the raise is July 1.

● **AIEE's** Pacific general meeting will be held in Phoenix, Ariz., Aug. 19-23. A well-rounded program of work and play has been planned by J. E. Redmond, president, Redmond Supply Co., general chairman, who guarantees a temperature of 78 F in all rooms and meeting places. Entertainment will be provided for wives and families.

● **California Oregon Power Co.'s** application for a license to build a plant on the Klamath River in Oregon was to be heard in Klamath Falls, beginning June 30. FPC scheduled for the same time hearings on an order in which it asked the company to show cause why it should not file application for a license for its existing hydro developments on the Klamath.

SHORTAGE OF ENGINEERS REPORTED IN CANADA

Shortage of engineers is holding back some Canadian projects and hampering the dominion's defense effort. This is reported by three Canadian experts, two of them officers of the Engineering Institute of Canada. Dr. John B. Stirling, incoming president of the Engineering Institute, and Ira P. McNab, retiring president, quoted National Employment Service figures to show that there are some 2,350 engineering positions open in Canada, but only 1,757 engineering students will be graduated this year.

They said an appreciable number of American and British engineers were coming to Canada—about 200 British engineers have entered the country over the past year—but at the same time the country is losing some of its young engineers to the United States. Most American engineers are coming to western Canada. Boosting the demand for engineers is the investment by British and American capital in plants to utilize raw materials which once were exported, they said.

Dr. G. M. Shrum, director of the British Columbia Research Council, member of the National Defense Board and head of the department of physics at the University of British Columbia at Vancouver told British Columbia Professional Engineers' Assn. recently that low salaries were a contributing factor to the engineer shortage plaguing the defense effort.

He complained that an engineer graduating after spending thousands of dollars on his education, got only $300 a month—less than an untrained person could earn in some fields. He urged the association to aid the national emergency by encouraging more engineering scholarships in both high schools and universities.

● **Following change** in ownership of Seattle's central steam heating system from the Puget Sound Power & Light Co. to the Seattle Steam Corp., Richard McKay, general manager, stated the system would be completely rehabilitated at a cost of approximately $1 million. Engineering studies, McKay said, indicate the 11 miles of underground steam pipelines, ranging from 4 to 18 in. in diameter, will not have to be replaced, although some repair work is required. He said, however, that generating facilities at the Western Avenue plant are so antiquated that practically complete rehabilitation will be necessary. McKay went to Seattle from Spokane where he was with Washington Water Power.

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NEWS ABOUT PEOPLE

● **To provide a crew** for Cabinet Gorge plant, Washington Water Power Co. has announced nine personnel changes. **Roy Ferguson,** former station superintendent at Chelan, will be superintendent at Cabinet Gorge. **John Graham,** former operator of B station at Nine Mile, will be chief operator. **T. Vern Fryer** will become Chelan superintendent. **Lyle Noble** will take charge of the Monroe St., Nine Mile and Upper Falls plants. **A. F. Miller** will be superintendent of the Lewiston and Grangeville, Idaho, and Clarkston, Wash., plants. **E. F. Heflin** will be superintendent and **Fred Anderson,** chief operator, at Long Lake. **C. M. Bennett** will be superintendent at Post Falls, Idaho.

● **Joseph A. Tudor,** Westinghouse consultant on electrification to the lumber and pulp and paper industries in the Northwest, has been appointed an industrial application engineer for the company, with headquarters in Portland.

● **James M. Scales** has been made advertising and sales promotion manager of the W. J. Lancaster Co., Motorola distributor in northern California. Scales was formerly general sales manager for Leo J. Meyberg Co. and more recently was regional manager of Zenith Radio Corp.

● **Charles E. Canada,** sales engineer for G-E's apparatus sales division in Portland, retired recently after 41 years of service. An authority in the field of power generation and transmission, he has been in the Portland office since 1911, except for a year in Honolulu on special assignment.

● **Albert W. Smith,** sales promotion and advertising manager for Arizona Public Service Co., has joined Ebasco Services Inc. as advertising and sales promotion consultant.

● **Robert B. McKnight** has been appointed Western regional sales manager for Nesco Inc., with headquarters in Los Angeles.

● **John F. McDaniel,** formerly with Hotpoint in San Francisco and Seattle, has been made manager of marketing, with headquarters in Chicago.

H. H. Courtright, left, manager of PG and E's San Joaquin division, receives the Fresno State College Foundation award for distinguished service from President Arnold E. Joyal. The award is given annually to a citizen of the San Joaquin Valley for outstanding contribution to college and community welfare. Courtright has actively supported the college during its 21-year history, and previously worked with a group instrumental in establishment of the original normal school in Fresno. Approximately 2,000 attended the presentation ceremony held at the college last month

● **Ralph Hubbard** has been elected new chairman of the Denver Section, AIEE. He is the manager of the Rocky Mountain Electrical League and is also vice-president of the International Association of Electrical Leagues, is a past president of the Colorado Society of Engineers and the Colorado Engineering Council. Other officers elected to the Denver section are **Hilding F. Gidlund,** Public Service Co. of Colorado, vice-chairman; and **Arlie E. Paige,** professor of electrical engineering at University of Denver, secretary-treasurer.

● **Bruce D. Henderson,** general purchasing agent for Westinghouse Electric Corp., was in the West recently. He spoke at the Third Annual Conference on Purchasing at the University of California at Berkeley and Los Angeles.

● **Robert Baker** has been transferred from the Leadville division of Public Service Co. of Colorado as division commercial manager to be the division commercial manager of the Brighton division as of July 1, 1952.

● **Loring S. Brock** will succeed **Arthur C. Moore** as district vice-president of the Intermountain sales district, Columbia-Geneva Steel Division of U. S. Steel Co. Moore will retire after 42 years of service.

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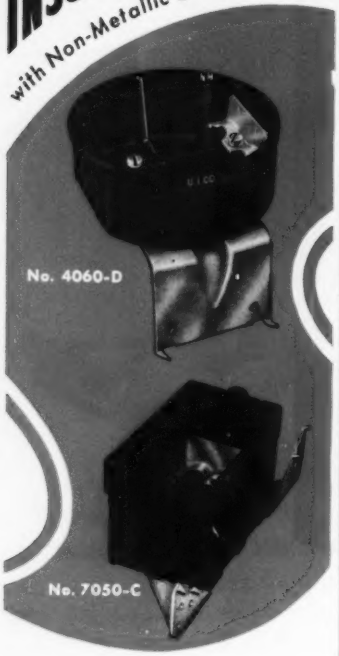

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● **Arthur J. Porter,** formerly assistant superintendent of production for Portland General Electric Co., has been advanced to superintendent of production. Appointed to assistant superintendent of production in Porter's place is **Arthur H. Greisser,** formerly assistant general sales manager. Porter was employed by PGE in 1933 shortly after graduation from Oregon State College. Starting in one of the company's hydroelectric plants as a wiper he advanced to successively higher posts until his appointment in 1950 as assistant superintendent of production. Greisser, graduate of Stanford University, joined the PGE staff in 1929, doing hydraulic and mechanical engineering work until his appointment as industrial engineer and later as assistant general sales manager.

Porter

● **Ivan L. Bateman** was named assistant chief electrical engineer of the Los Angeles Department of Water & Power, with responsibility for coordinating the workings of the two divisions, operating and general plant. Bateman has been electrical engineer in charge of operations, a post that will be taken over by **Ted Blakeslee. H. H. Cox** has been appointed assistant electrical engineer in charge of operations, succeeding Blakeslee.

● **George M. Bowman,** city electrical engineer for Fresno, was transferred to the naval retired list with the rank of rear admiral, probably the ranking naval reserve officer in the San Joaquin valley, recently. He was elevated in rank because of his heroic efforts in saving the USS *Saratoga* when its switchboard and electric power system were crippled by the Japanese. Bowman, from his practical field experience, patched the cables and by-passed the switchboard and restored the *Saratoga* to running condition after its terrible beating. He has three more years to go before retiring from his city engineering post.

● Westinghouse Electric Supply Co. has appointed **William P. Frost** as radio and television sales manager for its Vernon, Calif., branch. Before joining Westinghouse, he was district sales manager for Packard-Bell at Los Angeles.

● **Ed DesCamp,** with Graybar Electric Co. for 41½ years at Seattle, has retired. He was manager of power apparatus sales.

● New duties covering the administration of the commercial, promotional and industrial relations of the Hawaiian Electric Co. have been assigned to **Ralph B. Johnson,** who has been elected vice-president and secretary of the company. At the same time, **Richard L. Summers** was elected assistant secretary.

● Retirement of **Morris Dempse Lack** of San Francisco, special tax counselor for Pacific Gas and Electric Co., was announced recently. During a career of more than half a century, he played a pioneering role in shaping major features of California's tax system. He was made manager of PG and E's tax department in 1930 and was promoted to special tax counselor in 1947.

CORROSION ENGINEERS

Leading engineering and construction firm offers staff positions to corrosion engineers with minimum of three or four years experience in corrosion investigations and design of cathodic protection on pipe lines and lead cables in country and city networks. Must be graduate electrical engineer (or equivalent). Work involves extensive travel, with headquarters in New York City. Salary commensurate with experience and ability. Good opportunity for advancement. Box 267, Electrical West, 68 Post St., San Francisco 4, Calif.

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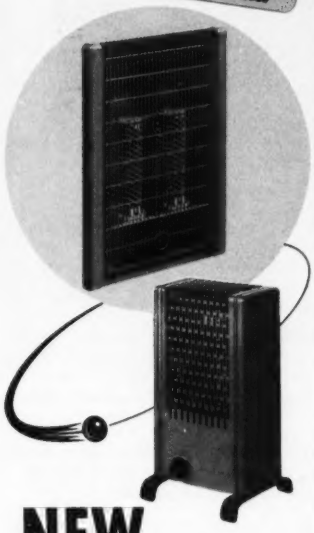
with... WESIX IONIX Wiredheat



NEW

Wesix-Ionix Wiredheat means better profits for you this heating season.

Wesix-Ionix Wiredheat destroys airborne bacteria, incinerates dust and pollen particles...actually freshens stale air by absorbing the positive charges that infect most urban air. By absorbing these unwanted charges, Wesix-Ionix brings to the home the same, balanced "Ion Rectified" air found in famous health resorts, better health for the whole family.

Available built-in to both Wesix Wall Furnaces and automatic portable heaters, the new, patented Ionix feature costs nothing extra to operate, needs no maintenance or adjustment.

WESIX IONIX Wiredheat

Write your nearest Wesix office for complete information and promotional material.

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390 FIRST ST • SAN FRANCISCO, CALIF.
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SEATTLE • HUNTSVILLE, ALA.

For outstanding public service in forest fire prevention, Southern California Edison Co. has received an annual award of the California Fire Prevention Committee. Ned Clarine, left, superintendent of communications, and Wayne Johnson, vice-president, are pictured with the plaque, which was presented at a joint meeting of the committee and the State Board of Forestry in Sacramento. The citation commended the well-planned and continuous educational programs promoted by So. Calif. Edison

● **Werner P. Gullander,** district manager of the General Electric Supply Corp. at Seattle for the past three years, has been appointed financial vice-president of the Weyerhaeuser Timber Co. at Tacoma. He was secretary-treasurer for G-E Supply before transferring to Seattle.

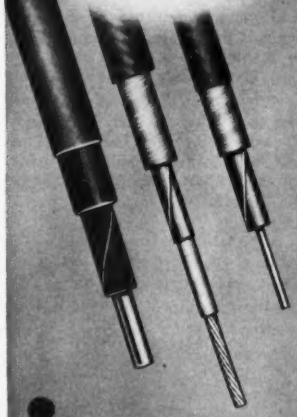
● **Fred H. Hartz** of Sacramento, Calif., for five years chief of the U.S. Bureau of Reclamation's mechanical engineering section in Region II, has left for India where he will help in the supervision of technical work in the design and installation of mechanical features of dams and power plants being constructed by India's Central Power and Water Board.

● **Roy Samson,** electrical engineer for the Okanogan County PUD at Okanogan, Wash., has accepted a position as chief engineer for the Ketchikan Public Utilities at Ketchikan, Alaska.

● **S. E. Erskine** has been made manager, apparatus division, and **S. V. Grisdale,** manager, wholesale division, for the Canadian General Electric Co., Pacific District.

● **Glenn L. Brown,** Monarch Electric Range factory representative for a great many years throughout the Western states and well known to the appliance industry, died June 11 at his home in Oakland, following a month's illness.

ALWAYS
Besto-Wire®
for
SWITCHBOARD
WIRE



There is a Besto-Wire for every switchboard or control apparatus application.

We manufacture types AVA and AVB switchboard wires. They have tinned conductors, varnished cambric tapes, and either cotton or asbestos braid. These wires resist flame, oil, and corrosive vapors.

Consult us for all your wire and cable needs. Write for our new catalog.

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NOTES ON THE TRADE

VHF Radio Telephone Installation Made

First installation on the Pacific Coast of a new method of providing telephone service by use of very-high-frequency radio was put in operation recently by Pacific Tel and Tel. It serves the Carrisa Plains area in California, separated by 50 miles of rugged mountainous terrain from Paso Robles.

Initially 15 ranchers were provided with instruments. Previously, the only service available in the rich wheat and cattle area had been a U. S. Forest Service line from Santa Margarita, to which only four telephones were connected.

Calls over the new system are placed in the same manner as any other call. By lifting the receiver, which automatically activates a radio transmitter, the subscriber is connected to the Paso Robles telephone operator.

● **The James H. Blinn** Co. of Denver held a demonstration of the Benjamin "Grid-Lite" lighting system for school officials, lighting engineers and contractors at the Park Lane Hotel, Denver, June 18. **A. E. Swedenborg,** assistant general sales manager of Benjamin Electric Mfg. Co., and **I. H. Stockel,** central division sales manager, conducted the demonstration.

Structural steel framework for one of two carbon baking ovens for Alcoa's Wenatchee, Wash., plant. Bethlehem Pacific has contract for approximately 11,000 tons of structural steel for the plant. The building shown will house ovens for baking carbons used as electrodes in the electrolytic process of reducing aluminum ore; will be 520x80 ft.

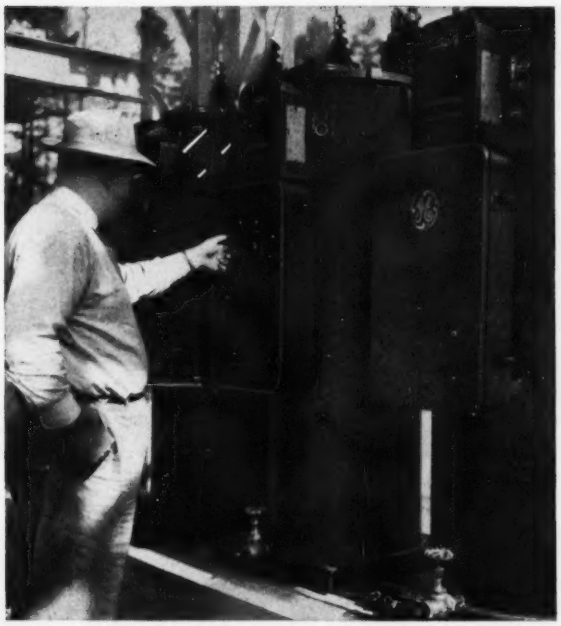
● **Golden State Appliance Distributing Co.** has been established by Admiral Corp. to handle distribution and service of its television and radio receivers, refrigerators and ranges. **Harold D. Conklin,** former regional manager for Admiral, has been named vice-president and general manager of the new branch, at 274 Brannan St., San Francisco. The northern California and western Nevada territory formerly handled by McCormack & Co. will be serviced through the new office. **John Barker,** formerly with Free-Westinghouse, is general sales manager.

● **E. D. Stryker,** head of utility sales, General Electric Co., Nela Park, was in the West last month for a premiere of G-E's professionally produced movie, *Bright Future.* The color film shows three homes before and after installation of scientifically planned lighting. Produced for the consumer, it is available for showing to club and civic groups.

What's cookin' was truly shown to dealers throughout the West by Sunbeam in meetings such as this in San Francisco, when John Sandoval and his men introduced the new cooker and deep fryer and showed what it could do with eight different kinds of meals

● **Shaffer & Nelson** will represent Burndy Engineering Co. in the territory formerly covered by **F. W. Carlson.** This includes the states of Washington and Oregon, the northern part of Idaho and western part of Montana. Shaffer & Nelson now has two offices and may add a third. Eric Nelson operates the Seattle office at 312 Occidental Ave., zone 4, and John Shaffer has charge of the Portland office at 1204 N.W. Glisan St., zone 9. The firm expects to open a Spokane office soon.

● **Removal** of the firm's Los Angeles office and warehouse to 326 S. San Pedro St. has been announced by Guy de Leuze, president of Panama Lamp & Commercial Co. Inc. The new quarters make possible larger warehouse stocks.



General Electric's Type IRS single-phase induction voltage regulators (shown above) and the three-phase Type IRT's provide the finest regulation obtainable for heavily loaded, urban feeders.

Class I Accuracy Controls now standard on these G-E Regulators

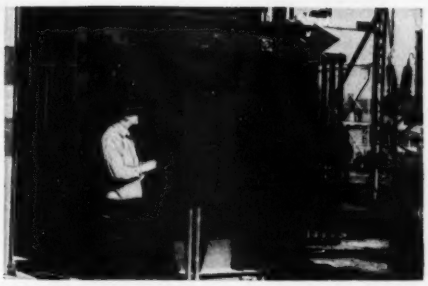
Highly accurate controls that decrease voltage spread—permit your feeders to carry more load . . . at no extra cost

Today, with power demands on your feeders rising, the increased accuracy of these G-E voltage regulators becomes a significant system design tool.

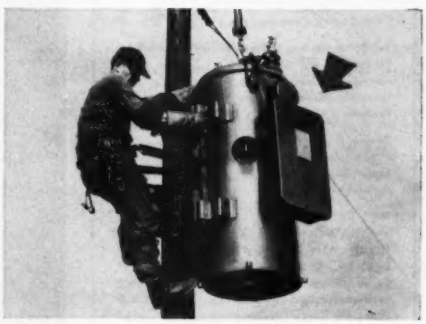
The controls on these regulators meet rigid ASA Standards for Class I accuracy. They have an *over-all* error of not more than ± 1%—99% accuracy—regardless of operating changes in temperature, frequency or load.

As a result, when you use these G-E regulators, you can tolerate more drop in your regulated feeders without at any time exceeding established voltage limits. Your existing feeders can carry heavier loads for greater distance. And your new construction can be designed with this increased load-carrying capacity in mind.

For further information on what Class I accuracy can mean to you, write for GEA-5690. *General Electric Company, Schenectady 5, New York.* 404-87



General Electric's Type MLT32 step voltage regulators are ideally suited for three-phase circuits that require close, accurate voltage regulation.



General Electric's Type ML32 single-phase step voltage regulators permit you to set new standards of regulation on your branch and rural circuits.

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Index to Advertisers
July 1952

Allen Bradley Co. 33, 34
Allis-Chalmers Mfg. Co. 13, 36, 37, 59, 115
American Tele & Tele Co. 12
Anaconda Wire & Cable Co. 113
Appleton Electric Co. 43

Brewer-Titchener Corp. 40, 41
Briegel Method Tool Co. 6
BullDog Electric Products Co. 21
Burton Equipment Co. Inc 122

Chance Co., A. B. 121
Classified 132
Cole Electric Co. 138

Davey Tree Surgery 122
Driver-Harris 25

Electric Equipment Co. 132
Electrical Fittings Corp. 16
Essex Wire Corp. 54

Fisher Pierce Co. 116
Fleur-O-Lier Mfgrs. 24
Four Wheel Drive Auto Co. 55

Gardner Electric Mfg. Co. 119
General Cable Corp. 10, 11, 22, 23
General Electric Co.:
Bridgeport, Construction Materials Div. 32
Schenectady, Apparatus Div. . . 1, 8, 9, 18, 19, 50, 51, 111, 135
General Switch Corp. 131
Greenlee Tool Co. 130

Holophane, Inc. 30
Honn Co., George E. 54
Hubbard & Co. 49

Illinois Electric Porcelain Co. 52
Indiana Steel & Wire 52

Jeffries Transformer Co. 52
Johns-Manville 109

Killark Electric Mfg. Co. 31

Line Material Company 3

McCabe Powers Auto Body Co. 60
Marcus Transformer Co. 46
Miller Co., The 26

National Tele Supply Company 123

Ohio Carbon Company 48

Pacific Coast Elec'l Association . . 4th Cover
Pacific Gas and Electric Co. . . . . 3rd Cover
Penn-Union Electric Corp. 137
Porcelain Insulator Corp. 124
Preformed Line Products Co. 20

Revere Electric Mfg. Co. 56
Rhode Island Insulated Wire Co. 133
Rome Cable Corp. 14, 15
Roller-Smith Corp. 53

Shell Oil Company 27
Sherman Mfg. Co., H. B. 54
Simplex Wire & Cable Co. 39
Smith Co., S. Morgan 127
Smoot-Holman Company 129
Southern California Edison Co. . . 2nd Cover
Spang-Chalfant, Div. Nat'l Supply 17
Square D Company 7
Sunbeam Lighting Company 117

Tork Clock Co., Inc. 122

Union Insulating Co. Inc. 132

Victor Insulators, Inc. 47

Wesix Electric Heater Co. 133
Western Insulated Wire Co. 42
Westinghouse Electric Corp. 4, 5, 28, 29, 44, 45, 57

PROFILES

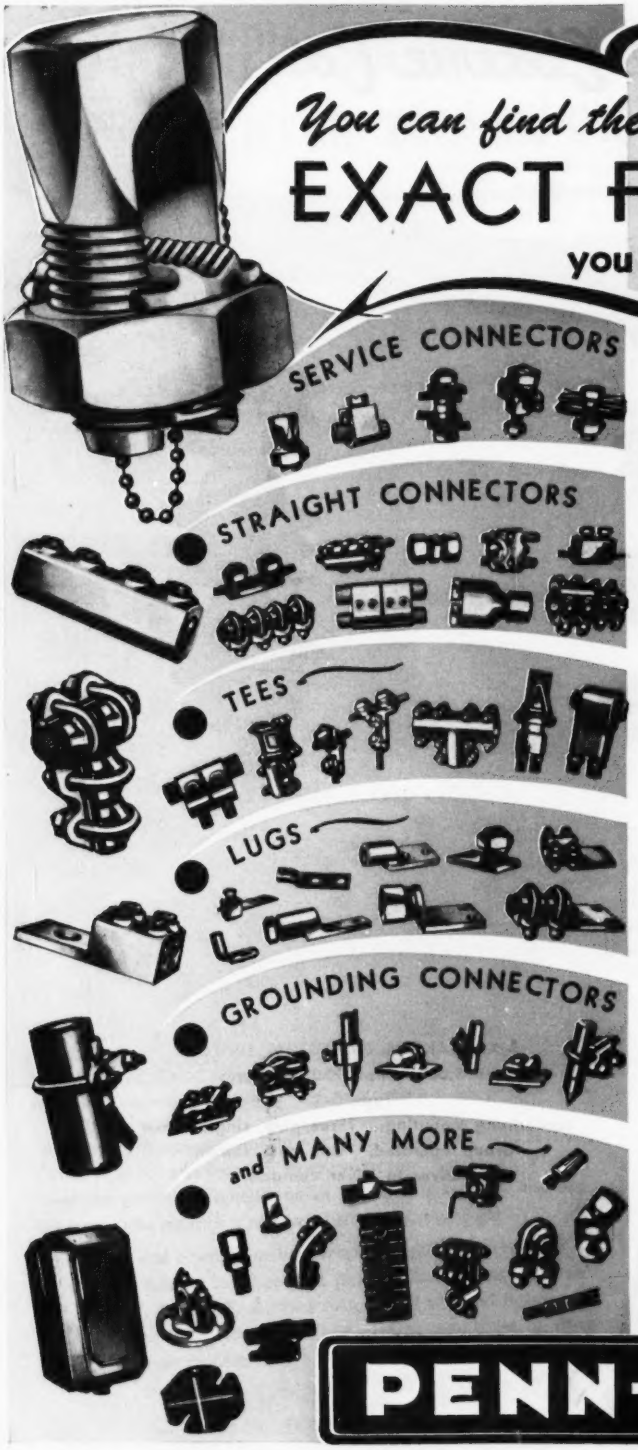
Lasher

Waggoner

Recent personnel changes in the West brought promotion to these men. Marshall Lasher succeeded the late W. W. Glosser as vice-president of Hubbard & Co., California, and a director of the parent firm. Raymond M. Waggoner was made vice-president, Pacific Coast sales, by Hubbard. C. W. Brissenden became general sales manager for Portland General Electric upon the retirement of A. C. McMicken. In Los Angeles, the Department of Water & Power made Ivan L. Bateman assistant chief electrical engineer; Ted Blakeslee, electrical engineer in charge of operations; and H. H. Cox, assistant electrical engineer in charge of operating engineering

Brissenden McMicken

Blakeslee Bateman Cox



PENN-UNION Catalog

The conductor fittings shown here can only suggest the wide variety. You'll find practically every good type, in a complete range of sizes.

New connectors are constantly being added - - so when you need a special fitting for an unusual service, tell us about it. Most likely we have exactly what you want.

Better design is a Penn-Union feature that you'll appreciate. For example, note the large gripping surfaces for wrenches, on the service connector shown in the upper left corner. When you use any Penn-Union fitting, you are sure that it is dependable - - mechanically and electrically.

Preferred by Leading Users, who have found that the "Penn-Union" mark on a connector is their best guarantee of unfailing service.

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AIR BREAK DISCONNECTING SWITCH
115,000 volts—1200 amperes
Type 0-2
Underhung mounting. Three-pole, single throw.
Group operated. One pole shown.
Silver to silver contacts.

"Planned lighting eases paper work on our new and used car sales!"

—Says Robert Waters, Jr., Vice-President of James F. Waters, Inc., San Francisco

Fluorescent fixtures provide glareless illumination in James F. Waters, Inc., main office

"Processing the paper work of our sales of new and used cars demands accuracy and freedom from eye strain," writes Mr. Waters. "And our people work better under the lighting we have installed. We never lose sight of a new sale because of poor light!"

This is just one example of how modern lighting has paid off by improving efficiency in offices and factories throughout the West. On file at P. G. and E. are case histories of planned lighting in businesses similar to yours. We'll be glad to send these lighting results to you on request.

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

7AX-52

Whatever your business

Good Lighting is a Good Investment

Increases production, sales

Reduces waste

Keeps employees happy, efficient

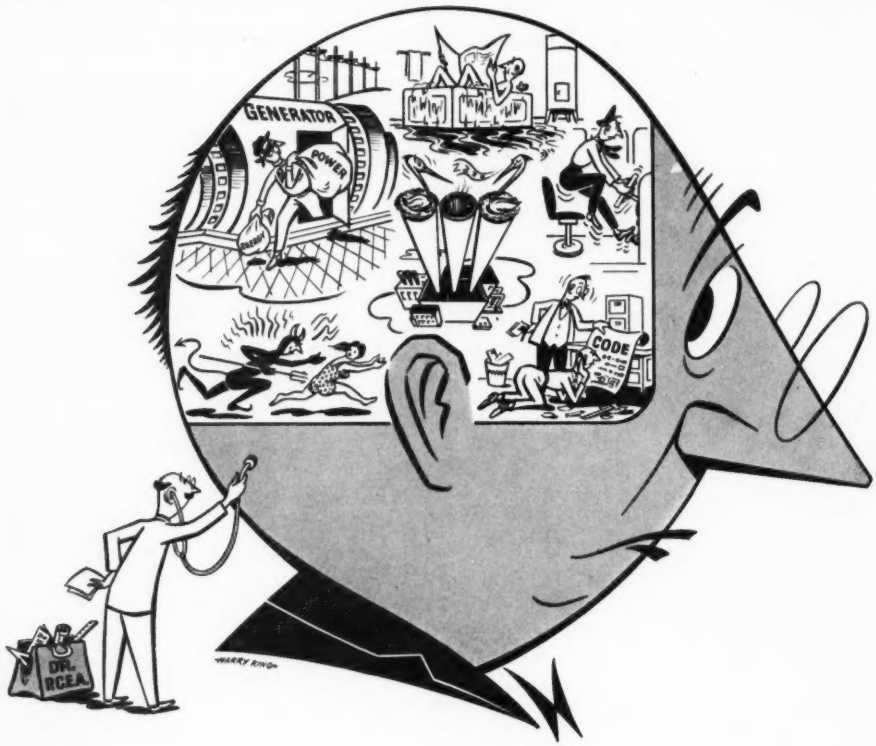
Reduces accidents

Increases cleanliness

For a survey of your lighting and ideas on how better lighting can help you, call the lighting engineer at your P.G. and E. office, or consult your contractor or engineer.

ONE OF A SERIES OF ADS TELLING HOW YOU CAN MAKE YOUR P.C.E.A. MEMBERSHIP PAY DIVIDENDS

WATTS ON YOUR MIND?



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Whatever the symptoms, old Dr. PCEA and his associates probably can help you solve your particular problem. For over 35 years we've been treating thousands of patients like you who've come to us for advice and assistance.

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